

November 13, 1961

PULP & PAPER



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WELCH



WRIST

Engineering Chair- men

in special reports
to this magazine tell what was
significant in papers and
discussions in their sessions
at TAPPI's 16th Engineering
Conference starts on page 79

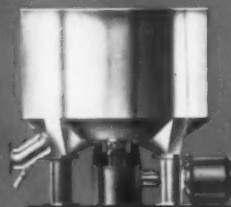
Cost reduction successes
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Scott begins outside chip
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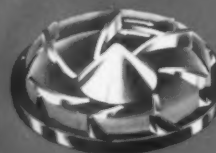


"The Emerson Dualator does the best defibering job of any equipment we know about"

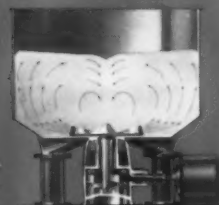
says **David W. Peat**, Manager of Manufacturing of the Gilman Paper Company, Gilman, Vermont.



The Emerson Dualator



... employs contra-rotating rotors which form a cylindrical zone of positive defibering action



... and develops a distinctive radial stock flow.

NEW EMERSON DUALATOR REDUCES DEFIBERING TIME AND ENERGY INPUT AT GILMAN

"Following our search for a pulper that could defiber hard-sized and wet strength broke effectively with minimum use of heat and chemicals," continued Mr. Peat, "we chose the Emerson Dualator. A full year of continuous operation proves it does the job better and faster than previous methods with far less power per ton of throughput."

Small wonder at Gilman's enthusiasm! Based upon an entirely new defibering concept, the Dualator is the most advanced pulper ever developed.

Utilizing two bottom rotors operating in opposite directions on the same axis, a cylindrically shaped defibering zone is defined by the narrow clearance between the inner and outer rotor vanes. Stock is directed from the inner rotor into the path of the outer rotor vanes. This abrupt reversal in direction, at an interfacial speed of 6,000 fpm, produces tremendous hydraulic shear forces that literally rip the stock to shreds, with no sacrifice in fiber length.

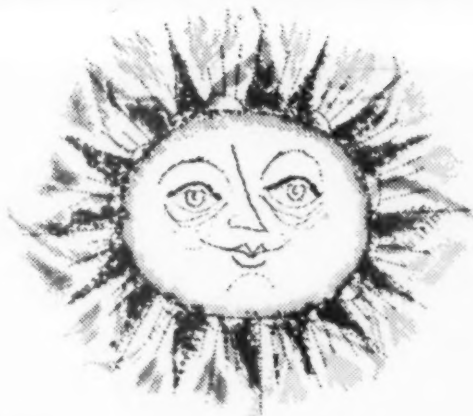
The revolutionary design of the new Emerson Dualator reduces the defibering time and energy input of conven-

tional pulpers by at least one half. With contra-rotating rotors, energy is converted to productive pulping. None is wasted in needless circulation. This means more tons/day of complete, efficient defibering. It permits the use of smaller tubs and, in many instances, reduces or eliminates the necessity of using chemicals and/or heat. A distinctive radial flow pattern develops from the interaction of the two rotors, which permits operation at as little as 25% of tub capacity with no splashing.

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envies**



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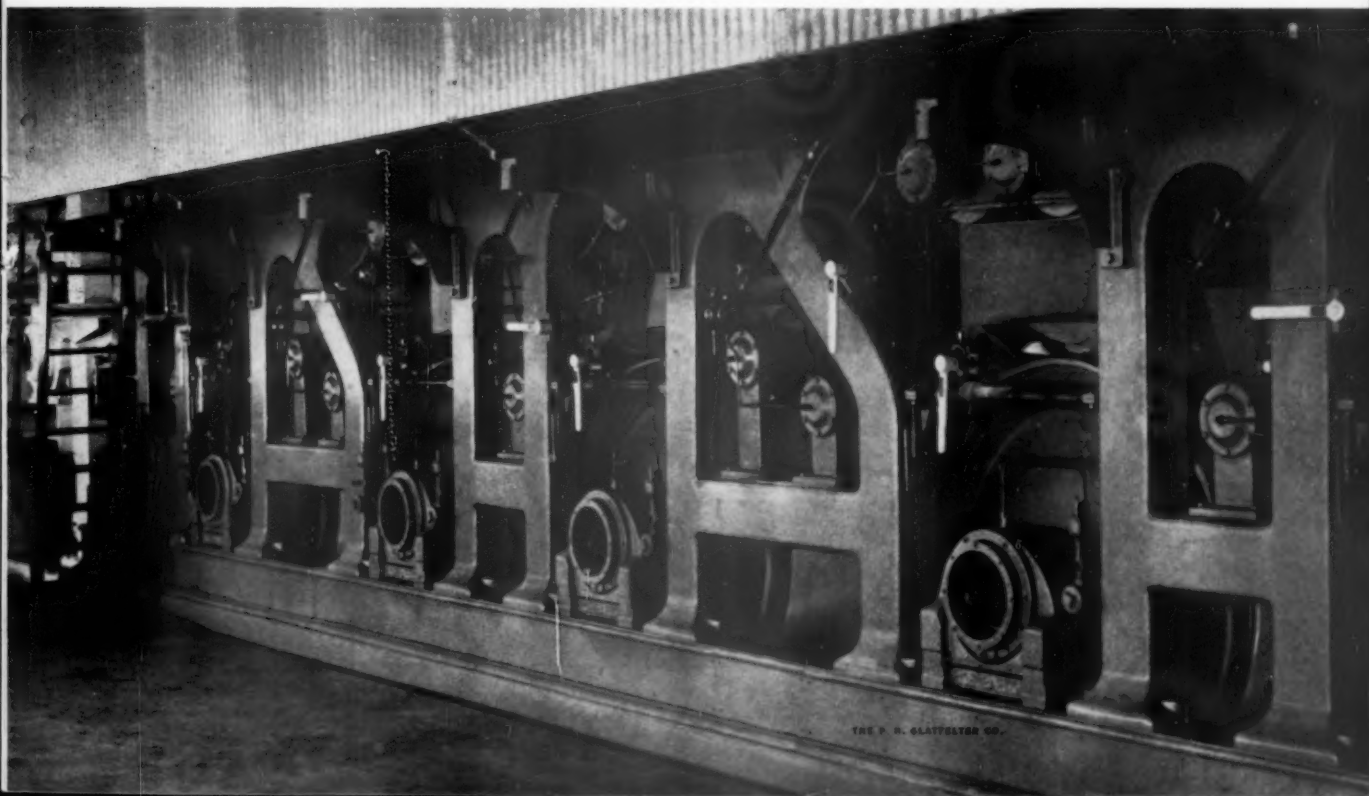
Furthermore, thermal efficiency can be increased and dryer sections shortened on both new installations and modernization of old.

Experience gathered since 1837 has made Rice Barton dryer experts, particularly leading the industry in perfecting Air Drying. Let us explain the flexibility and economy with which you can increase your capacity. Write for latest information.

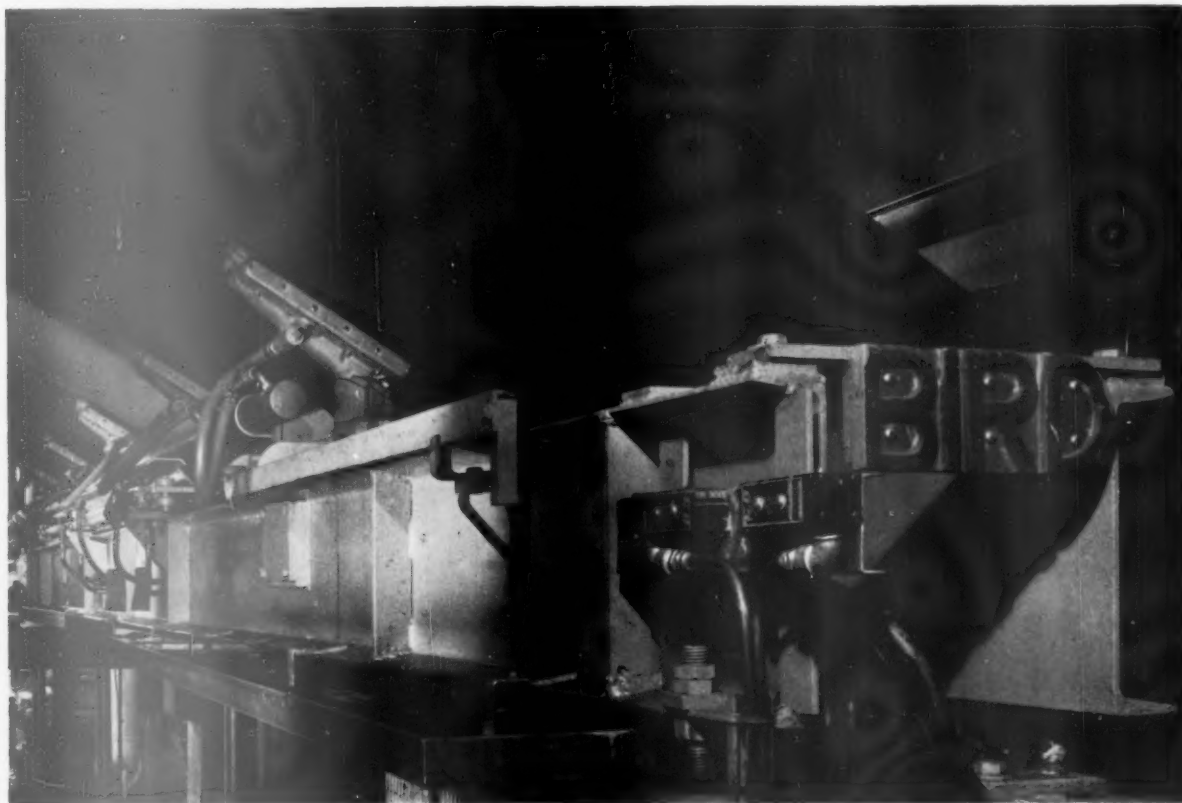


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Continuously
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Their Best Work
Without
Midweek Shutdowns
Or Slowdowns**

The picture tells the story

It shows a modern Vickery Felt Conditioner in operation on a big, fast running felt in one of the country's finest and most up-to-date mills.

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PULSE OF THE INDUSTRY

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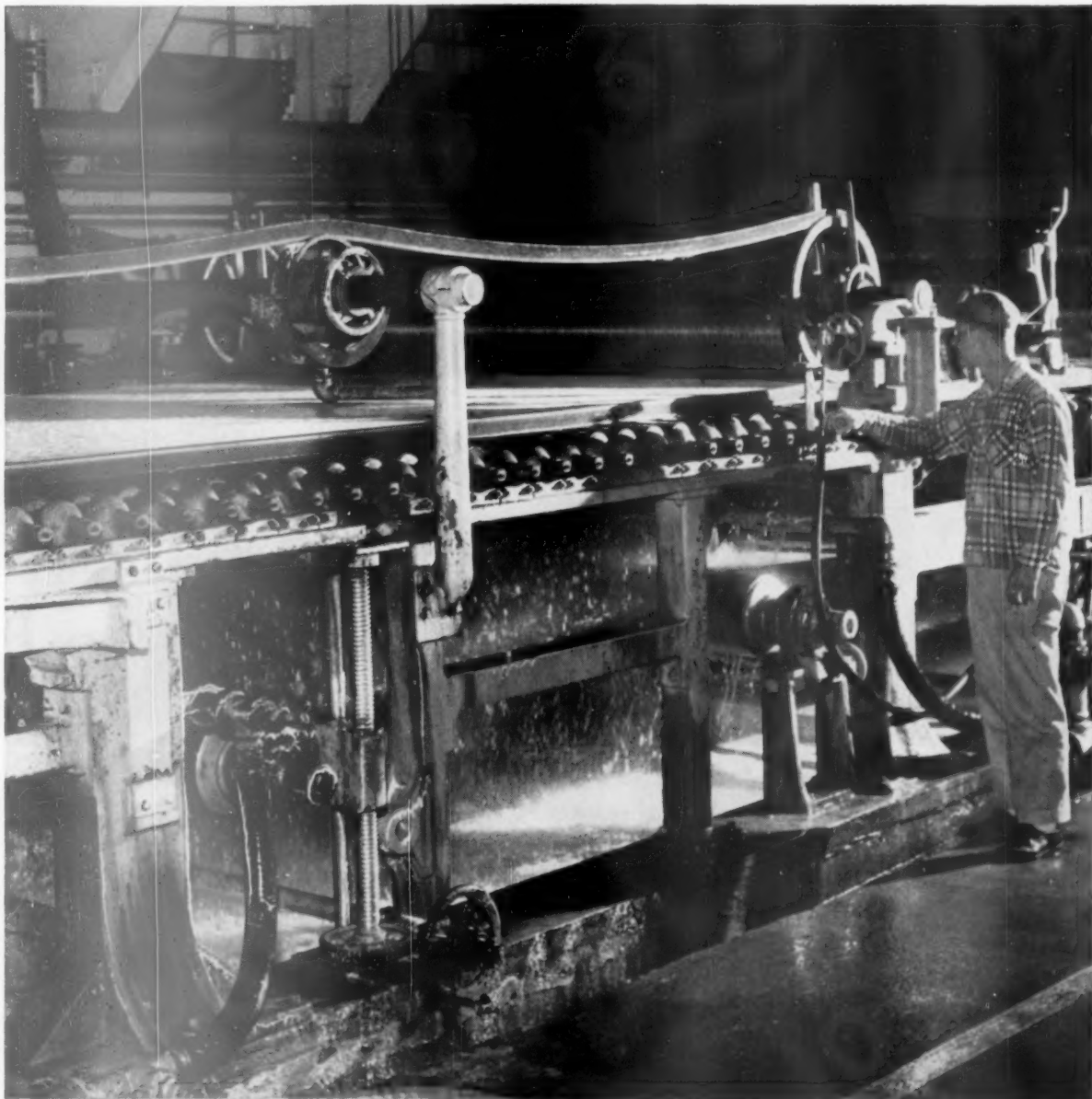
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PULP & PAPER is published every other week by Miller Freeman Publications, Incorporated, Emmett Street, Bristol, Conn. Editorial & Executive Offices, 370 Lexington Ave., New York 17, New York. Second-class postage paid at Bristol, Conn.

RATES: Single copy 50¢. U.S. and Canada—1 yr., \$5; 2 yrs., \$8; 3 yrs., \$10. Other countries—1 yr., \$7; 2 yrs., \$12; 3 yrs., \$16. Sterling or any European funds may be sent to Miller Freeman Publications, 130 Crawford Street, London W. 1, England.

CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif., C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to **PULP & PAPER**, above address. Include both old and new addresses.

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absolutely level, the sheet that's produced is smooth and uniform.

BFG table rolls are built to last. Those you see above have been in continuous operation since 1939 at Rayonier, Inc., Fernandina Beach, Florida, helping produce chemical cellulose. In the 21 years, there's been no cover separation, no corrosion. The rolls haven't even needed regrinding.

Next time you buy a new Fourdrinier, or have one rebuilt, be sure that

B.F. Goodrich Dukbak rolls are in your specifications. In the meantime, if you'd like more facts on BFG paper mill rolls, send for our free catalog. *B.F. Goodrich Industrial Products Co., Dept. M-199, Akron 18, Ohio.*



PULP & PAPER — November 13, 1961

NEWS DIGEST...

Hot black stock screening

was hailed as a major new trend in kraft pulping, at least for unbleached mills, in a top level industry panel at the Alkaline Pulping Conference in Houston, Tex., Nov. 2. Its greatest value may be in pollution abatement, but experts spoke enthusiastically of savings in labor, capital investment, elimination of foaming, low power consumption, etc. Mills are installing these screens ahead of brown stock washers or in between washers. . . . Full details in next issue.

Continuous digesters attract

wide attention in the industry, with several new units on order. Scheduled for February start up at Potlatch Forests Inc. is an Impco unit. Impco engineers have stirred interest by their prediction that counter current washing inside the digester, after the cook, can eliminate one or two washers in the conventional three-stage system.

New continuous two-stage digester

at Boise Cascade mill in the West is near end of basic testing and "study" period. The E. D. Jones unit is expected to be in full production next year.

Another continuous digester

for Canada has been ordered by Howe Sound division of Canadian Forest Products, Ltd. at Port Mellon, B.C. The Kamyr unit is 325 tpd for bleachable kraft pulp. One such unit at Consolidated Paper Corp. Ltd. at Three Rivers, Que., replaced eight batch digesters. See "Industry Growth," page 21.

A computer will control

all processes for the new 700 tpd linerboard mill

to be built in Georgia by Southern Land Timber & Pulp Co. See "Production," page 15.

New off-machine trailing blade

coater is now in production at St. Regis Paper Co.'s Bucksport, Me., mill. Rice Barton unit is designed to coat up to 220 in. web with 5 lbs. of coating at 55% solids at speeds up to 3,000 fpm. Grade range is 25 to 60 lbs. See "Growth," page 15.

Market pulp improvement

is seen by Lawson Turcotte, president of Puget Sound, who says clearly defined upward trends are reversing patterns of a year ago. See "Business," page 7.

E. V. McSwiney has been elected

a vice president of Rome Kraft Co. and Georgia Kraft Co. W. M. Ebersole becomes general manager of production of both. Also in the news: Ray Brown is now a vice president and resident mgr. of East Texas Pulp & Paper Co. See "People," page 31.

Target dates for Catawba, S.C.

division of Bowaters Southern Paper Corp. are to start up a new groundwood mill in early March and the new Beloit paper machine and Rice Barton off-machine trailing blade coater in early April. So far, kraft pulp has been the Catawba product.

Major expansion of two large

established British Columbia companies will probably be announced before long. The projects will affect MacMillan, Bloedel & Powell River's Harmac mill on Vancouver Island and Crown Zellerbach Canada's operations at Duncan Bay (Elk Falls div.).

..... BUSINESS

Optimistic but realistic

is attitude of industry as sales rise, but some earnings dip

NEW YORK—Nine months and other various interim reports of pulp, paper and timber companies show sales gains, to give some support to a ground swell of calm and restrained optimism which is pervading the paper division of the industry. The profit squeeze was still tight, however.

In due course, it is hoped increased paper business will boost morale in the pulp ranks—in a tangible way.

Crown Zellerbach Corp. had only a slight rise in sales for nine months of 1961 to \$418,948,000, compared to the 1960 period's \$418,770,000. But income of \$28,154,000 was down 8%. Earnings were down to \$1.97 a share from \$2.15. These reports were made at a stockholders' meeting held in Seattle, with Chairman J. D. Zellerbach presiding.

Paper and board production of

1,329,953 tons was 3.1% down. Reed O. Hunt, president, said the strike at the Bogalusa, La. mill, which started Aug. 27, has hurt quarterly earnings. Actually, he said, there has been a rising trend in sales since May.

In Portland, Ore., Georgia-Pacific Corp. reported higher profits for the third quarter, \$3,699,242, up more than \$580,000 over the 1960 period. Net earnings for nine months, how-

IT
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ADDS
UP...

to the finest service
for domestic and world-wide
sales of pulp, paper,
paperboard and newsprint.



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ORGANIZATION
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NEW YORK 17, N. Y.



ever, were \$11,384,893, down about \$620,000.

Olin Mathieson reported sales slightly better than the third quarter a year ago—\$179,879,000 this year—but net profits declined.

Owens-Illinois Glass Co., also partly in paper business, reported a \$10,000,000 rise in sales for the ten months to \$44,000,000, but earnings were down more than \$2,000,000 to \$24,406,341.

For one of the smaller companies, Fitchburg Paper Co., of Massachusetts, both sales and earnings were up for the third quarter. Earnings were \$143,140 as compared with \$99,205; sales were \$4,636,986, as compared with \$4,497,632.

In Wisconsin, Bergstrom Paper Co. reported an 8.2% rise in sales and 10% in earnings for nine months.

S. D. Warren Co. reported nine months production of 143,406 tons, down nearly 4,000. Sales, however, rose about \$27,000 to \$55,503,000 for the nine months, compared to a year ago. Earnings per share were down two cents to \$1.87.

Fourth quarter sales of Container Corp. of America are expected to show an increase over the 1960 period, says Chairman Wesley M. Dixon, even though his company reported third quarter sales down nearly a million to \$84,556,000. Net income was down about \$150,000 to \$4,092,000.

Union Bag-Camp Paper Corp. expects 1961 earnings to fall from 15 to 17%, from \$18,590,000 in 1960. The proposed acquisitions of Doeskins Products Inc., and Write-Right Mfg. Co. would add \$15,000,000 to 1962 volume, it was said. A Doeskin holders group claiming to represent 350,000 shares was opposing the acquisition.

Consolidated Water Power & Paper Co. fell off almost \$3,000,000 in sales for the first nine months this year as compared with the same period last year. This year's figure—\$63,973,890. Earnings were down for the same period, from \$6,026,180 to \$4,976,810. Decreases were attributed to lower operating rates, price declines in some lines, higher wages and other costs.

Prices were considered generally to

be steadier than ever and fiber box manufacturers were reported as expecting another price increase in early 1962. Two months ago the fiber box price was raised 10%.

Depreciated Canadian dollar influence is reflected in improved earnings of several Canadian pulp and paper companies, notably MacMillan, Bloedel & Powell River, whose total sales for the first nine months of this year were \$222,841,858, compared with \$220,251,456 for the corresponding period in 1960. Net income for the period ending September 30 was \$19,706,054, compared with \$18,518,724 for the same period in 1960. Company's sales are principally pulp, newsprint, lumber and plywood.

Profits for the first nine months of this year for Fraser Cos. Ltd. amounted to \$2,170,602, or about 97¢/share compared with \$2,319,785 or \$1.04/share for the same period last year. Paperboard coating operations are scheduled to begin operations this month at the Edmunston, N.B. mill.

Turcotte sees clear upward pulp trends

BELLINGHAM, WASH.—The woodpulp industry is participating in the current advance in the nation's business and industrial activity, according to the findings of Lawson Turcotte, pres., Puget Sound Pulp & Timber Co.

Clearly defined upward trends in production and use of pulp, reversing the pattern of a year ago, have brought the industry's tonnages to their all-time highs.

Whereas pulp consumption in 1961 was 3.4% behind 1960 at the end of February, by May it was only 0.8% behind, and at the end of August it was 1.4% ahead.

United States production of all grades of woodpulp totaled about 17,208,000 tons in the first eight months of 1961, against 16,970,000 tons in the 1960 period.

Imports totaled 1,602,000 tons this

year, 1,581,000 tons last year. Export of American-made pulp rose to 789,000 tons in this year's first eight months, against 737,000 tons last year.

Producers' inventories were increased 35,000 tons in the first eight months of 1961; last year in the corresponding months they were increased 49,000 tons.

Apparent consumption (not including inventory increase) totaled 17,986,000 tons in the January-August period of 1961, against 17,765,000 tons in those months of 1960.

"Gains to date in pulp production and use are less than the historical average growth of the industry," Mr. Turcotte observed. "No doubt the historical average growth rate of 3 to 5% a year will be regained. But meanwhile the industry is still at grips with two major problems: excess capacity,



TURCOTTE

and a sales price scale too low for current manufacturing cost conditions.

"The pulp industry's operating rate must be stepped up, and its profit margin broadened, before the over-all picture can be viewed with enthusiasm," Mr. Turcotte declared.

Merchant sales continue at high levels

NEW YORK—Printing paper merchant sales activity advanced 5.64% over August levels to the second highest point in history, reports NPTA. Compared to Sept. 1960 sales, total sales were off 1%. However, because there was one less working day, this is actually an increase in activity.

Cumulative totals for the first nine months of 1961 measure 0.54% ahead of last year, while activity is up 1%.

Sales activity for the nation's industrial paper merchants reached record heights for the second consecutive month (August and September). A decrease of three working days from

August however, lowered the index by 12.60% to 146.48%.

Activity advanced by 0.51% over August levels, comparable to a normal 2% increase from August to September and marking the eighth consecutive monthly gain. Level of activity now stands 25% ahead of January.

Fluid Power NEWS



Report No. 11,807 From Oilgear Application-Engineering Files

How OILGEAR Any-Speed Drive Systems on revolutionary, new, continuous pipe mill provide up to 30% over and under base lineshaft speed for each stand—controlled to $\pm 0.1\%$ accuracy . . . maintain constant interstand speed ratios.

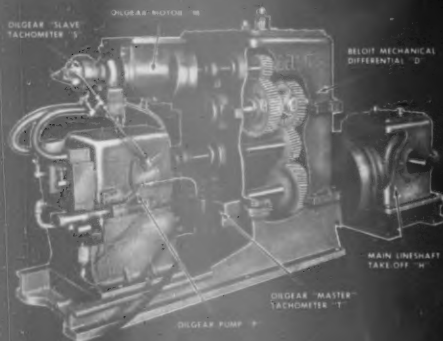
USER: Lorain (Ohio) Works, National Tube Division, United States Steel Corp.
Machine Builder — Aetna Standard Division, Blaw-Knox Co., Pittsburgh, Pa.
Differential Drive Manufacturer — Beloit Iron Works, Beloit, Wis.

PROBLEM: To provide accurate, efficient, independent, variable speed drive and control systems between a 1000hp lineshaft drive and 14 form-weld, stretch-reduce stands, and rotary flying hot saw of a new, continuous, butt-weld pipe mill designed to produce approx. 237,000 tons of 1½" to 4" butt-weld pipe annually from flash-welded, endless webs of skelp. Delivery speeds range from 700 ft/min. of 1½" pipe to 150 ft/min. of 4" pipe.

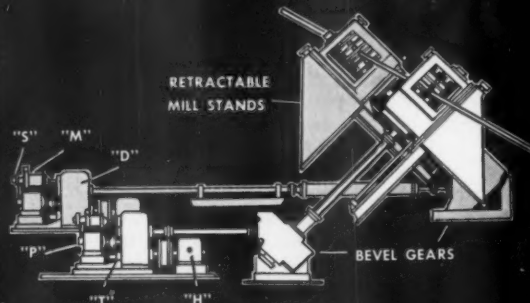
DRIVE REQUIREMENTS: 1. "Hard", non-resilient characteristics of direct gearing—with provision for infinite, variable speed control of any or all stands from 30% under to 30% over predetermined base lineshaft speed. 2. Accu-

rate, preset, speed ratios between stands, capable of precisely maintaining transmitted differential loads to 150 hp—without drift—regardless of load change or lineshaft speed variation. 3. Optional, remote, automatic, "preset", and remote manual control. 4. Direct-reading, constant, visual indication of torque being pulled at each stand, and speed ratios between all adjacent stands. 6. Drive a rotary, flying cut-off saw at maximum mill delivery speeds—synchronized with speed of last active mill stand. 7. Must be compact, with trouble-free dependability for continuous, heavy-duty drive service. 8. One reputable source and responsibility preferred.

Application-Engineered HYTAC® Drive System For Continuous, Butt-weld Pipe Mill



LEFT: Fluid from Master Tach (T) gives stand drive speed command to control on Pump (P). Slave Tach (S)—direct-connected to Drive Motor (M)—feeds back a flow signal proportional to actual drive speed. Through remote, pushbutton control stations connected to electric pilot motor on Master Tach (T), operator can vary speed of each, or all stands infinitely up to 30% over or under base lineshaft speed . . . with accuracy to $\pm 0.1\%$. **RIGHT:** Two typical stands of seven stand stretch-reduce mill. Each stand is mounted on a steel sled—45° to horizontal—90° in relation to each other. Sled stands are movable by a hydraulic cylinder. A hydraulic clamping mechanism holds sleds in selected positions. Six pipe sizes can be rolled without changing rolls.



SOLUTION: Oilgear Application-Engineered HYTAC®—Beloit Mechanical Differential Drives provide precise speed and ratio control for 7 form-weld stands, 7 stretch-reduce stands, and a rotary, flying cut-off saw. Overall mechanical efficiency has been determined as well above 90% at full load . . . with remotely controlled speed variable up to 30% over and under base lineshaft speed for any one or all stands—with accuracy maintained within $\pm 0.1\%$. Production speeds required for a given pipe size can be preset within a small fraction of 1%—and duplicated at any later date. In this precisely controlled process—a National Tube innovation—the butt-welded pipe is both elongated and reduced in diameter . . . with wall thickness and pipe diameter held to extremely close tolerances by the accuracy of interstand speed ratios. An Oilgear "Any-Speed" Drive and Control System automatically synchronizes the rotary, flying cut-off saw with maximum delivery speed of the last active stretch-reduce stand—to cut the continuous pipe in accurate, predetermined lengths.

BIBLIOGRAPHY: Steel Magazine, Dec. 12, 1960, Page 86; Automation Magazine, May, 1961, Page 68; Steel Magazine, Jan. 30, 1961, Page 114; A paper—"Variable Speed Hydro-Mechanical Drive", by Charles W. Modersohn, Staff Engineer, Beloit Iron Works, presented at N.C.I.H., Oct. 21, 1960. ① See Oilgear Fluid Power NEWS 8, 11, 15, 16—available on request.

*HYTAC is an Oilgear Company registered trademark.

Installation of Oilgear-Beloit Variable Speed Hydro-Mechanical Drive and Control Systems—successfully pioneered on paper machine drives ①—have exceeded originally specified requirements—without "start-up" problems . . . indicating the value of Oilgear's Application-Engineering teamwork throughout all stages of design, building, installation, and testing.

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While total sales fell 2% below September, 1960, activity, including one less working day, was 2.76% ahead.

Cumulative totals for the first nine months of this year moved to within 0.34% of the corresponding 1960 to-

tals, while activity for this period showed a slight increase of 0.18% for the first time this year, says NPTA. ■

How pulp and paper companies rank

NEW YORK—Procter & Gamble and International Paper Co. are first and second among all companies in U.S.A. which have pulp or paper properties and the only such companies with sales of over one billion dollars (1960). Procter & Gamble ranked 26th and International was ranked 40th among *Fortune* magazine's recently issued "500 Largest Industrial Corporations" for 1960, according to sales.

(In PULP & PAPER's World Review 1961, 12 leading

American pulp and paper (and timber) companies and their sales were listed but we regret The Mead Corp. was inadvertently omitted. The new annual *Fortune* magazine survey shows Mead 12th among all companies which have paper or pulp properties and 5th among companies primarily in paper).

The *Fortune* list of all companies which have pulp and paper properties (some major pulp-paper properties; some minor) are shown below:

Rank Among U.S. In- dustries	Company	Headquarters	Sales (1960)	Net Profit (1960)
26th	Procter & Gamble	Cincinnati	\$ 1,441,548,000	\$ 98,078,000
40th	International Paper	New York	1,012,648,000	71,669,000
46th	Eastman Kodak	Rochester, N.Y.	944,761,000	127,062,000
66th	Olin Mathieson Chemical	New York	689,623,000	34,669,000
78th	Owens-Illinois Glass	Toledo, Ohio	561,042,000	33,187,000
79th	Crown Zellerbach	San Francisco	553,711,000	40,076,000
80th	Grace (W.R.) Co.	New York	552,871,000	16,220,000
81st	Minnesota Mining & Mfg.	St. Paul, Minn.	549,675,000	70,692,000
84th	St. Regis Paper	New York	536,199,000	49,787,000
100th	Weyerhaeuser Co.	Tacoma, Wash.	457,916,000	47,751,000
118th	Kimberly-Clark	Neenah, Wis.	403,759,000	31,343,000
138th	Mead Paper Corp.	Dayton, Ohio	338,788,000	13,746,000
139th	Hercules Powder	Wilmington, Del.	336,905,000	27,165,000
141st	Container Corp. of America	Chicago	327,263,000	17,076,000
146th	Quaker Oats Co.	Chicago	321,843,000	13,523,000
149th	Scott Paper Co.	Chester, Pa.	313,276,000	27,730,000
156th	Johnson & Johnson	New Brunswick, N.J.	302,046,000	15,605,000
163rd	Armstrong Cork	Lancaster, Pa.	291,539,000	16,225,000
165th	Time Inc.	New York	287,121,000	9,303,000
175th	U.S. Gypsum	Chicago	273,460,000	38,394,000
179th	Celanese Corp.	New York	264,117,000	19,936,000
191st	Flintkote Corp.	New York	252,172,000	12,964,000
193rd	West Virginia Pulp and Paper Co.	New York	250,282,000	11,017,000
203rd	Diamond National	New York	236,654,000	12,706,000

209th	National Gypsum	Buffalo, N.Y.	227,169,000	23,493,000
213th	Georgia-Pacific	Portland, Ore.	221,998,000	15,210,000
224th	Union Bag- Camp Paper	New York	212,959,000	18,590,000
240th	Champion Paper	Hamilton, Ohio	195,051,000	9,701,000
251st	Curtis Publishing	Philadelphia	186,895,000	1,079,000
305th	Ex-Cell-O Corp.	Detroit	137,597,000	8,245,000
312th	Bemis Bro. Bag	St. Louis	131,651,000	2,869,000
313th	Boise Cascade	Boise, Idaho	131,182,000	3,365,000
316th	Rayonier Inc.	New York	129,066,000	9,504,000
323rd	KVP Sutherland Paper	Kalamazoo, Mich.	126,958,000	5,478,000
351st	McGraw-Hill Publishing	New York	116,910,000	8,996,000
363rd	New York Times	New York	112,149,000	1,652,000
364th	Fibreboard Paper Products	San Francisco	111,932,000	2,083,000
377th	Allied Mills	Chicago	105,657,000	2,455,000
379th	Potlatch Forests	Lewiston, Idaho	103,166,000	5,675,000
398th	Riegel Paper Corp.	New York	97,917,000	3,068,000
413th	Inland Container	Indianapolis	93,312,000	6,682,000
414th	Certain-Teed Products	Ardmore, Pa.	93,195,000	2,346,000
422nd	Lily-Tulip Cup	New York	90,736,000	6,395,000
433rd	Cons. Water Power & Paper	Wisconsin Rapids	88,780,000	8,025,000
439th	Minnesota & Ontario Paper	Minneapolis	87,508,000	5,833,000
461st	Federal Paper Board	Bogota, N.J.	83,148,000	4,000,000
478th	Hammermill Paper	Erie, Pa.	78,655,000	3,255,000
488th	Oxford Paper Co.	New York	74,255,000	4,838,000
497th	American Forests Products	San Francisco	73,318,000	422,000

Optimism hits year's peak at NPTA show

CHICAGO—Conventions are nearly always optimistic, as the saying goes (and it doesn't always show up in the end-of-year balance sheet), but the National Paper Trade Association optimism was a bit more on solid ground.

This was the annual fall Paper Show and the peak attendance in the Conrad Hilton was about 5,000 persons.

There was an exceptionally good session on office procedures, with showing of new "push-button" and computer-type equipment for payroll, inventory, billing, etc.

The "Imagine-ering" awards went

to 20 merchant and customer associates and there were 30 honorable mentions, all of them for a multitude of ideas calculated to increase printing and the use of paper.

In the "Imagineering" contest the paper merchant's first prize idea was a packet of return envelopes attributed to Vaughn McAllister of Dillard Paper Co., Charlotte, N.C., and second was an employee wallet booklet "Facts About Monsanto" from W. R. Witler, of Tobey Fine Papers, St. Louis.

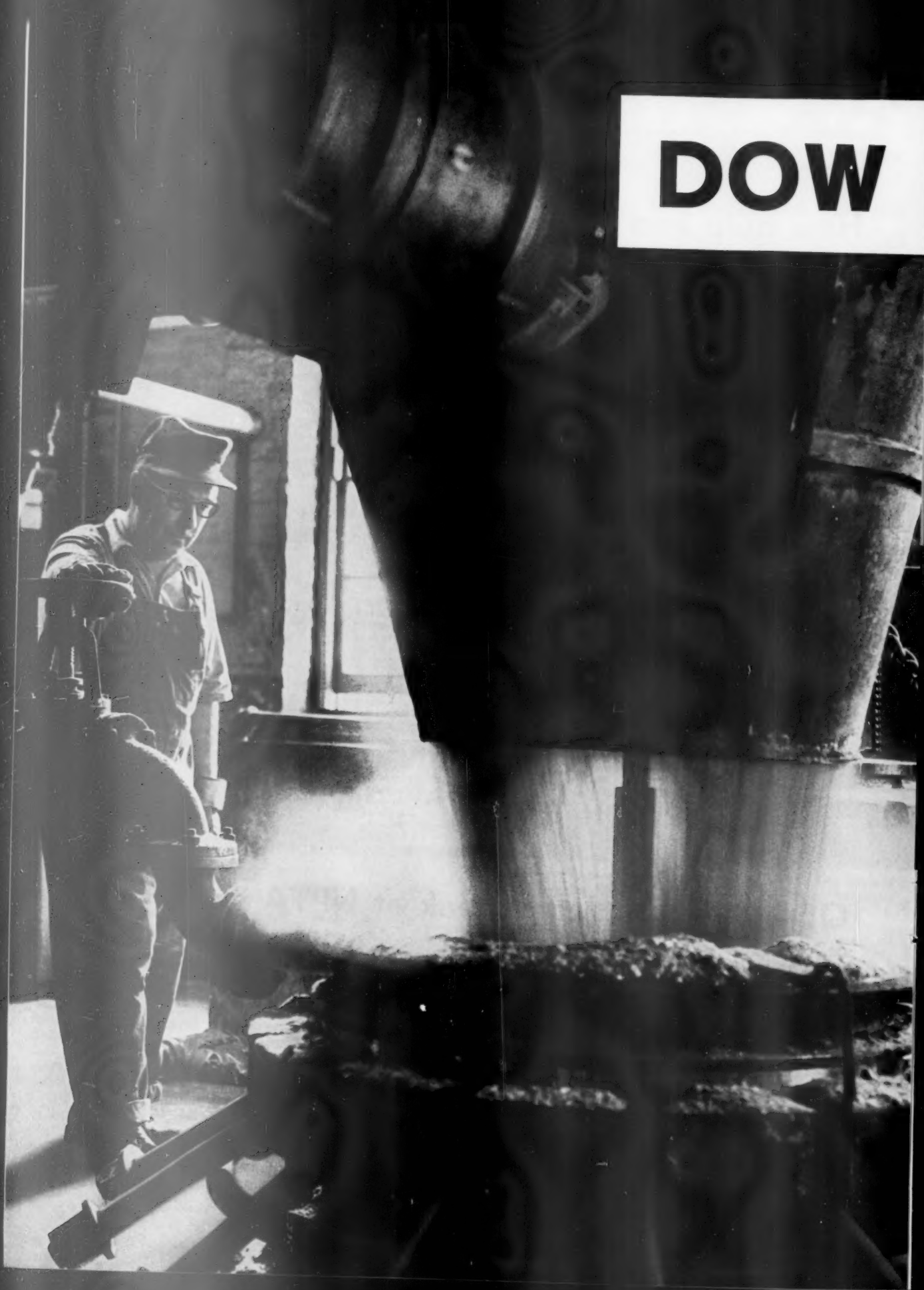
"Who says banks don't give away samples?"—a bank card with a dime was third, from Carol Jamerson, Alling & Cory Co.; and other top mer-

chant winners, in order were George Knapp, Jr., of Tobey; Franklin Henry of Blake, Moffitt & Towne. Mrs. Glory Carlberg of Zellerbach Paper; Hugh Phillips, Frank Parsons Paper; Robert Parker, Thomas Price Co.; Harry McQuaid of Blake, Moffitt & Towne, and John Butler of Century Paper Co. Among ideas for more paper usage and printing, were pocket drinking cups with advertisements, "Sorry I missed you" cards, "Pick Your Own Neighbor" real estate postcard and matchbook checks.

Prizes were valued at \$10,000.

Glenn Leach, executive secretary of NPTA and his staff of eight persons

DOW



pulp processing chemicals

MAGNESIUM HYDROXIDE SLURRY

MAGNEFITE PULPING GIVES HIGHER STRENGTH AND YIELDS, SHORTER COOKS, THROUGH A WIDER RANGE OF WOODS

A significant improvement over earlier magnesium-base pulping process, the Magnefite process permits a greater range of wood species to be pulped . . . in shorter cooking cycles . . . producing excellent pulp at higher strength and brightness with better yields. Magnefite pulping may be combined with a highly efficient commercially proven heat and chemical recovery process.

The Magnefite process has been successfully applied to a wide variety of woods—jack pine, tamarack, white pine, birch, elm, poplar, maple, and other difficult-to-process woods—permitting a lower cost/ton of pulp produced.

Processing advantages are numerous. Cooking cycles are shorter since there is no limit to the speed at which the temperature of the digester can be raised. The absence of large quantities of SO_2 gas in the digester permits cooking at higher temperatures. A rapid increase in temperature is also possible as a result of impregnating pulpwood chips with hot magnesium bisulfite liquor of equal combined and free SO_2 . With such rapid penetration of chips, cooking time is reduced as much as 40%! This results in a substantial increase in digester capacity. The absence of true free SO_2 simplifies liquor make-up, eliminates the need for pressure storage vessels, and practically does away with dry relief.

In some cases, the cost and processing advantages

of Magnefite pulping justify its use even without chemical recovery. Where chemical recovery is justified, 90 percent of the pulping chemicals may be reclaimed and reconstituted in a recovery system.

Dow is a basic supplier of the principal ingredient, magnesium hydroxide . . . in slurry form for maximum handling ease . . . available for immediate delivery. Chances are Magnefite pulping can be an advantage in your processing operation. Write THE DOW CHEMICAL COMPANY, Midland, Michigan, Chemicals Sales Department 802JJ11-13, for further details.

THIRTEEN LOCATIONS COUNTRY-WIDE ASSURE PROMPT DELIVERY OF DOW CAUSTIC SODA

To serve you better, Dow Caustic Soda Solution 50% is available when, where, and how you want it from thirteen shipping points throughout the country. Fast delivery is assured via tank car and tank truck from four producing plants—Midland, Mich.; Freeport, Texas; Plaquemine, La.; and Pittsburg, Calif.; plus nine terminals—N. Charleston, S. C.; Carteret and Bayonne, N. J.; Denver, Colo.; Grants, N. Mex.; Chicago, Ill.; Los Angeles, Calif.; St. Louis, Mo., and Baltimore, Md. All provide tank truck and tank car shipments. For more information, call your nearest Dow Sales Office or write THE DOW CHEMICAL COMPANY, Midland, Michigan.

THE DOW CHEMICAL COMPANY



Midland, Michigan

The secret that couldn't be kept!

When the Johnson Rotary Syphon was ready to go, it was our intention to keep it under wraps for a while... until it had been thoroughly field-tested; until we had licked all installation problems; until we had a reasonable inventory on hand.

But good news has a way of getting around, and the clamor for test installations began almost before the patterns were finished. Today Johnson Rotary Syphons are operating in more than 50 mills. Many of these have already embarked on programs of complete conversion.

It is no longer a secret that the Johnson Rotary Syphon represents an important breakthrough in draining condensate from dryer rolls of paper machines. A new concept of pick-up design holds condensate film to a minimum, for optimum transfer of heat units to dryer shell. Better drainage helps reduce horsepower demand; eases bearing wear caused by prolonged "cascading"; cuts maintenance all along the line.

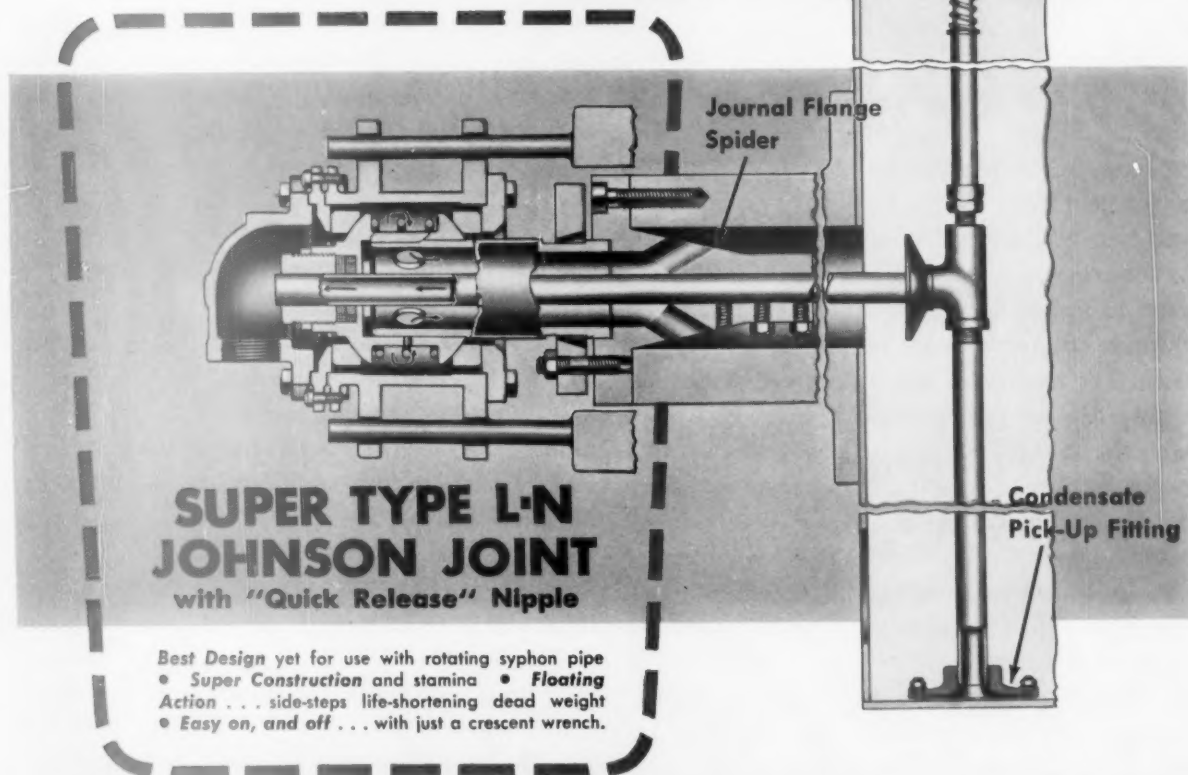
Ease of installation is a welcome feature. The Johnson Rotary Syphon can be inserted right through the manhole; there's no need to get inside, no internal drilling or tapping. There's even a journal-inserted syphon for dryers with handholes only. The Rotary Syphon can be installed anywhere along the face of the dryer shell.

As a logical sequel to the Johnson Rotary Pressure Joint, this new Rotary Syphon completes the task of getting steam in and condensate out of dryer rolls and squeezing maximum effect out of the heat units contained. One secret remains for you to discover: just how much it can improve production and cut costs in your mill!

For engineering data — with the full story of research, design and construction ask for copy of "Condensate Behavior in Paper Machines"



The New JOHNSON ROTARY SYPHON



THE JOHNSON CORPORATION

849 Wood Street, Three Rivers, Michigan

Rotary Pressure Joints • Direct Operated Solenoid Valves

won second highest national award from the American Society of Association Executives for the work they have

done in the issuance of bulletins and developing membership services. First prize went to the National Sales

Executives Assn., a group about 35 times as big as NPTA, so Mr. Leach and his staff rated very well indeed. ■

Strong volume, firm prices seen by NPTA

CHICAGO—The upturn for the paper industry business appears to be pretty general (but profits still lag). There was more optimism exuding at the recent National Paper Trade Association's meetings here in the Conrad Hilton than there has been in a paper gathering for many months.

Volume is strong and prices seem to have settled down firmly. The NPTA stressed need for closer understanding of merchants by mills and mills by merchants. The acquisition

of merchant houses by large paper companies (purchases of the merchant companies in Midwest and Far West loomed up as a possible major trend last summer) has come to a halt and no more such deals were in the offing.

As the Chicago exhibition and trade meeting was in full swing, John R. Kimberly, president of Kimberly-Clark, issued a statement that after a "good" August and September, October came in "big in sales."

Industry prices have recently had

"a little better tone" and there is "a definite need for firmer prices in the fine paper field and our current feeling is that a firming trend may be developing," said Mr. Kimberly.

Looking toward 1962, he said "all indications are that business will be good." His remarks were in tune with optimistic statements by J. D. Zellerbach of Crown Zellerbach Corp. in Canada, who said economists are looking for a booming 1962. He himself saw improvement signals. ■

..... BRIEFS

Gilman Paper entering fine paper field

GILMAN, VT.—Gilman Paper Co. has an extensive remodeling program underway here starting with water treatment, stock preparation and complete rebuilding of paper machines. This renovation is directed toward entry into the fine paper field.

At the same time, Gilman announces a change in the name of its specialty papers division to fine and specialty papers division. Heading the new division is Robert E. Bringman. He will be assisted by Glenn Booton.

Dial delivery keys new distribution center

SOUTH BEND, IND.—For Midwest customers, Weyerhaeuser Co. is establishing a paperboard distribution center and a customer warehouse service. It is also an answer to a major problem of this industry—higher and higher shipping and distribution costs.

The distribution program will be launched from a modern warehouse to be completed by Jan. 1 in the Airport Industrial Park at South Bend, Ind. A wide variety of paperboards in mill-production rolls will be delivered to South Bend from the company's mills on East and West Coasts (Longview, Wash., and Plymouth, N.C.). With complete sheeting and trimming facilities, the new distribution center provides faster

For Top Score in 32 Plants



Vernon Basom, (l.) manager of the Port Angeles, Wash., Sulfite Pulp & Board Mill of Fibreboard Paper Products, hands Fibreboard's 1960 Award of Merit, recently presented for the plant's "outstanding achievement in quality and improvement," to supervisory staff members (l. to r.) Bob Holcomb, supt., Pulp Mill; David Mosher, tech. supt.; and Gerald Green, supt., Board Mill. 32 plants were involved in the competition.

service to exacting customer requirements. It provides wide availability of paperboard types and sizes and excellent communications and transportation by truck and rail from the central South Bend location. Dial phone service will handle urgent calls and trim sheets can be delivered within 48 hours.

Buckeye raises prices on Cotton linters pulp-paper

MEMPHIS—The Buckeye Cellulose Corp. has announced a price increase

of \$13/ton for all its cotton linter pulps and papers. The increase, it explains, is necessitated by an increase in second-cut lint price. "As a stabilizing influence on pulp prices," says Buckeye, "only about half this increase in raw materials cost is reflected in the pulp price increase."

"Wood Pulp Statistics" now off press

NEW YORK—The 26th edition of the "Blue Book" of the pulp industry has just been published. "Wood Pulp Sta-



installed at



handle process

*Ross Engineered Air Systems
air in all vital mill areas including...*

Wash and bleach plant, chipper room, machine room, digester house, screen area, cutter and finishing room, turbine room, chemical preparation area, acid plant and testing laboratory.

*Complete, balanced air systems so
important in today's pulp and paper
production, from one responsibility.*

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tistics," published annually by the U.S. Pulp Producers Assn., Inc. is a 255-page statistics-crammed publication presenting the historical record of woodpulp supply and consumption in the major producing and consum-

ing countries of the world.

A special innovation this year, according to James L. Ritchie, executive director, is that a separate market pulp section has been set up and all market pulp data has been brought

together in a more usable form.

Copies of "Wood Pulp Statistics—1961," are available from the U.S. Pulp Producers Assn., Inc., 122 East 42 St., New York 17, N.Y. at \$10/copy.

.... PRODUCTION

Nine months production hits 26.4 million tons

NEW YORK—Continuing its recovery and upward climb, the paper and paperboard industry produced 26.4 million tons for the first nine months of this year, 1.8% above the same period last year, reports the American Paper & Pulp Assn.

Paperboard, which had been running behind about 6% earlier this year, is now running well above 3%

over last year.

Paper production, which had also been operating at lower rates, now shows better than a 1% gain.

Production of construction paper and paperboard has also shown a strong recovery from the early months of this year and is now operating above last year's rates. But, its 1961 nine-months figure was below 1960's.

Estimates, says the APPA, show that paper and paperboard requirements are fairly close to present rates of production. If the total economic activity continues the uptrend it has been following for the past two quarters, production in the last quarter may well move ahead of the record high rate estimated for the third quarter. ■

New mill to use electrical process computer

CEDAR SPRINGS, GA.—Southern Land Timber & Pulp Corp. has purchased a General Electric 312 process control computer for installation in its new 700 tpd kraft linerboard mill here, which is scheduled for operation late next year.

The computer will be used for automatic direction of on-line information processing and production control. Some functions to be performed by the computer system include: Logging of about 450 pieces of process data from all areas of the mill. Data will be recorded by both typewriters and tape punches. Typed log will be used primarily by mill

operators for routine operations while the punched tape record will be used for subsequent data correlation and analysis.

Monitoring will provide close surveillance of process variable for off-normal conditions. This will allow operators more time for pulp and papermaking. Preparation of management reports of a timely nature by computers will permit better management decisions for increased profitability. Complex calculations will be performed on input information and presentation will be made of these calculations to operators in forms suitable for use as operating guides.

Output control will be provided for selected mill processes. This function will allow automatic and dynamic control for process and profitability improvements.

Southern Land anticipates the process control system with a process computer as its nerve center, will have a significant effect on profitability of the mill's operations. Factors expected to contribute to increased profitability include higher machine use, better uniformity of product, less time lost in changing from production of one grade to another and fewer breaks on the paper machine and fewer operation errors. ■

.... INDUSTRY GROWTH

Blade coater boosts production at Bucksport

BUCKSPORT, ME.—The "Downeaster," a Rice Barton off-machine trailing blade coater is now in production here at St. Regis Paper Co. Designed to coat book grades from 25 to 60 lb., the unit can coat a maximum web of 220 in. and is designed for speeds up to 3,000 fpm.

Two trailing blade coating heads in tandem coat both sides of the sheet with up to 5 lbs./side of 55% solids. The 228-in. wide coater is housed in a new building 272 ft. long by 127 ft. wide and 65 ft. high, with two stories. The building is designed

to accommodate a second coater and a second supercalender.

Raw stock is pre-coated on No. 1 paper machine with about 3 lbs. of coating/ream of 25% solids coating. The pre-coater is a Beloit roll coater. Reel from the paper machine is transferred to a specially designed tractor-trailer and the reel is then delivered automatically by a gasoline-powered tractor to the paper roll storage area in the coating building. This is done by electronic guidance from a rail imbedded in the concrete floor.

Coated paper is finished on a 228-in., 10-roll Appleton supercalender,

designed for 2,500 fpm operations at 2,000 lbs. pli.

Threading speed is about 100 fpm. There are three sets of pull rolls, 14 paper rolls, four potentiometer rolls and eight expander rolls. Speed of the coater can be accelerated from zero to 3,000 fpm in 60 seconds. Automatic splices are made at speeds higher than 2,000 fpm.

The automatic splicer consists primarily of a pair of unwind arms, a pair of transfer arms and the swing roll. Each roll has its own drive but is automatically controlled to synchronize paper speeds. As the old roll of



200-pound WOG 3% Nickel Iron Gate Valve for paper mill service—Fig. 1093. Bolted flanged yoke-bonnet, stainless steel (316) outside screw rising stem and seat rings, Ni-resist solid wedge. Sizes, 2" through 30".



200-pound WOG Ni-resist Gate Valve—Figs. 2195 (regular face to face) and 2196 (short face to face). Bolted flanged yoke-bonnet, outside screw rising stem. Sizes, ¾" through 3". Available with screwed ends, 225 WOG, ¼" through 2".

200-pound psi Bronze "W.S." Full Flow Globe Valve — Fig. 2608. Union Bonnet. Renewable, hardened, wear-resisting stainless steel plug type disc and seat. Sizes ½" through 3". Angle, flanged end and visual control valves also available.



150-pound W. P. Stainless Steel Gate Valve—Figs. 2453DG (double wedge, sizes 2½" through 8") and 2453SG (solid wedge, sizes 2½" through 18"). Bolted flanged yoke-bonnet, outside screw rising stem. Sizes, 2½" through 4" have one-piece yoke; 5" to 18", two-piece yoke.

POWELL VALVES: FOR WATER...OIL...GAS.....

You can depend on Powell Valves to meet virtually every flow control need in pulp and paper mill service. They are available in industry's widest selection of designs and metals—including Ni-resist*, stainless steel, nickel, Monel Metal*, Hastelloy† alloys. And Powell's nationwide stocking means even more for you... faster delivery, less down time and greater savings.

When you buy Powell Valves, you buy dependable performance—the result of engineering skill and experience. For further information, call your nearby Powell Valve Distributor, or write us direct.

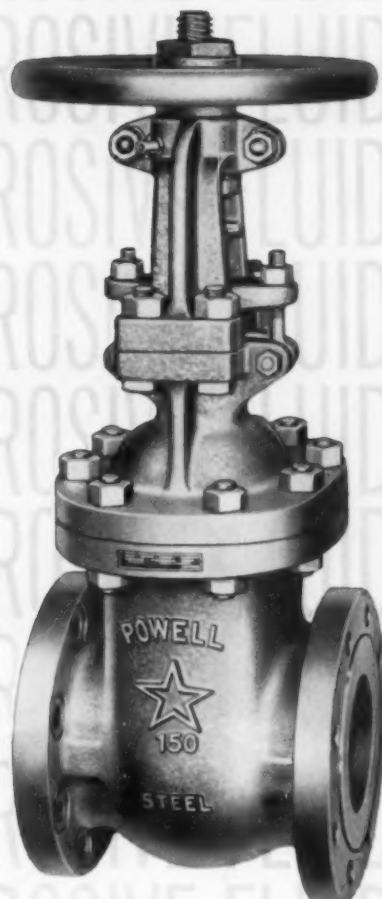
* Registered trade name of the International Nickel Company † Registered trade name of Haynes Stellite Company



200-pound WOG Ni-resist Swing Check Valve—Fig. 2192. Sizes 2" through 12". Small size valves have stainless steel seat rings, discs and disc hinges; larger sizes have Ni-resist discs with stainless steel (316) facing.



150-pound W. P. Flush Bottom Tank valve—Fig. 2309 (disc opens into tank) and Fig. 2310 (disc opens into valve). For convenient and fast draining of vessel. Available in stainless steel and other alloys, in sizes 1/2" through 8".



150-pound W. P. Steel Gate Valve—Fig. 1503 Bolted flanged yoke-bonnet, outside screw rising stem. Can also be supplied with screwed or welding ends. Sizes, 1/4" through 30". Powell Steel Valves are available for pressure from 150 through 2500 pounds.

.....AIR...STEAM OR CORROSIVE FLUIDS

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Refer to our catalogs in Sweet's and Chemical Engineering Catalog.

115th year of manufacturing industrial valves for the free world

POWELL DEPENDABLE VALVES

THE WM. POWELL COMPANY, CINCINNATI 14, OHIO





Suppose you had to write on birch bark

Birch bark was the best material Indians could find on which to paint their picture-messages. But when modern-day paper manufacturers included bark, birch or otherwise, in making groundwood pulp for paper, printing quality was poor.

The groundwood method produces twice as much pulp per cord of wood as other processes, but its low color was a drawback limiting its field of usefulness. In the 1940's Becco worked out a

Hydrogen Peroxide bleach producing a superior brightness with improved softness and bulk as well. As a result, a good many manufacturers continue to use Becco to make groundwood paper a more desirable product.

Do you have an interest in groundwood or chemical pulps? Becco, with more years of bleaching experience than any other peroxide manufacturer, can help you. Address: Dept., PP-61-2.

BECCO Hydrogen Peroxide

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Becco Chemical Division

General Sales Offices:

161 EAST 42nd STREET, NEW YORK 17, N. Y.

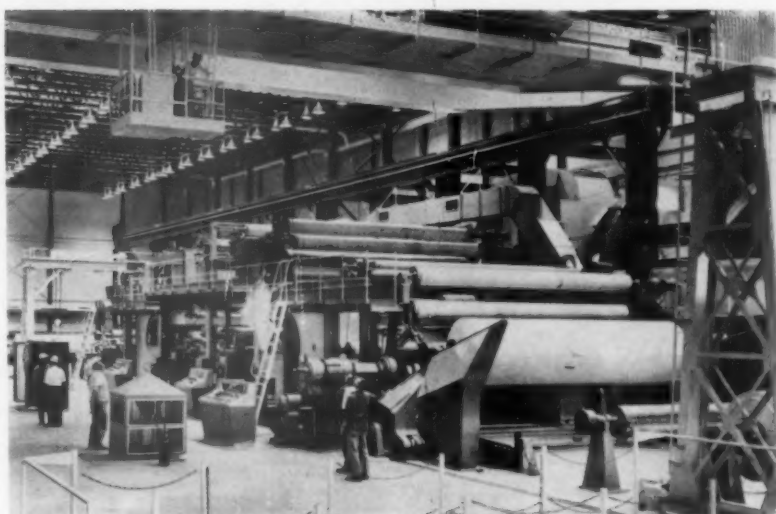


paper ends, the swing roll pushes the sheet against the new revolving roll of paper and the splice is made. A cut-off knife is automatically sequenced to cut the old sheet. A brake stops the old roll to prevent unwinding of the residual sheet on the floor. The unwind arms then deliver the old reel spool onto a storage rack. At a desired roll diameter, the transfer arms lower the new roll into the unwind arms while maintaining a constant speed. Maximum roll diameter is 72 in. but a 62 in. roll is currently being used.

There are 17 static-free paper carrying rolls and one aluminum roll on the coater. Three of these rolls and the aluminum roll are tensiometer rolls. Bearings are equipped with devices to sense the sheet tension at critical points in the coater range. These transmit the proper signal to the section drive to maintain constant sheet tension as the paper speed varies. The rolls are dynamically balanced for 3,000 fpm. The aluminum tensiometer roll is located down machine from the No. 4 dryer, just before the reel. Coated paper passes between the aluminum roll and a Moist-O-Graph, which measures and records moisture content of the sheet. This unit then automatically controls temperature of No. 4 dryer to keep the desired moisture content in the sheet.

The coating head consists essentially of upper and lower jaws to hold the coating blade, a pond for the coating color and control mechanisms. The coating head journals are located in pivotal arms so that the head may be retracted from the backing roll pneumatically and lowered and raised electrically. The head may be adjusted laterally about two inches.

The end dikes which retain the coating solution in the head are provided with felts that are rubber cov-



OFF-MACHINE 228-in. Rice Barton trailing blade coater at St. Regis, Bucksport.

ered on the two parallel surfaces at right angles to the paper. Dikes are adjustable, both parallel and perpendicular to the paper, so that sheets of different weight widths can be coated.

Micromatically adjustable stops permit accurate and exact positioning of the blade in relation to the backing roll. The head proper is positioned pneumatically against these stops. The bottom jaw of the head is held in position by pneumatic pressure working against springs and fixed stops. Opening of the jaws is adjustable from zero to 3/16 in. to accommodate blades of various thickness and to facilitate blade change.

Hardened steel blades are 3 in. wide by 220 in. long and .012 in. thick. The coater has a quick blade change device and an easy-out blade stiffener to facilitate handling blades during changes.

The coater has two dryer sections—one for each coater. The four 72

by 228 in. cylinder dryers are dynamically balanced for 3,000 fpm.

The reel drum is 48 in. dia. with a 228 in. face. A pair of receiving arms above the center line receive the reel spool when a new roll of paper is being started. At the push of a button on the control panel, the new roll is started automatically. However, the changeover may be accomplished by individual operations on the control panel for each step.

There are five control consoles parallel to the coater and a set of coating head controls at each backing roll support which permit the operator to observe operations and performance closely.

The rewinder is designed for maximum operations at 5,000 fpm. The backstand will take an 88 in. dia. roll and wind 72 in. dia. rolls. Rolls are finished on a roll header and a conveyor and automatic roll handling system convey the finished rolls to storage or to the shipping area. ■

Paperboard mill readies start-up in Canada

MONTREAL—The Kruger Organization's Turcot Paper Mills Co., is said to be the first new and also the largest multi-cylinder paperboard machine in Canada. Initial production is 30,000 tons/year, but the company has plans to double this.

Production is slated for November for the 200,000 sq. ft. paperboard mill which is being engineered into an existing building here in downtown Montreal adjacent to the Lachine


Canal, from which it will draw its water supply.

Paperboard and boxboard will be sold primarily in Canada, but the company hopes the export market will develop into substantial business. Location on the Lachine Canal puts it in a favorable position to export.

Major production will be nine-point corrugating medium, linerboard, various grades of folding and

non-folding boxboard and other special grades of paperboard now under development.

The mill has been designed to operate at 200 tpd rate but due to the immediate market outlet, says the company, it plans to operate the machine at a rate of 70 to 100 tpd. Production can be increased with addition of more drying capacity. All horsepower and motors required for 200 tpd production are installed.



THE **jet-cut** AGE IS HERE!

**super hard, wear resistant
knives that deliver big
production savings for you**

Label plants, binderies and paper mills are getting sensational results with the Jet-Cut. They're getting TWO TO THREE TIMES MORE CUTS with the Jet-Cut, dust or drag is virtually eliminated and its smooth finish gives cleaner cuts with absolute accuracy. It's made by The Ohio Knife Co. of special high alloy tool steel, heat treated for super hardness and will fit all types of cutters. For complete information, write Dept. 125-F



"Ohio Knife Co. Jet-Cut knife gives an absolutely accurate, cleaner cut," says Jim Cole, General Superintendent, Multi-Colortype Co., Cincinnati, Ohio.

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MANUFACTURERS OF
PLANER, VENEER, CHIPPER,
AND SLITTER KNIVES.

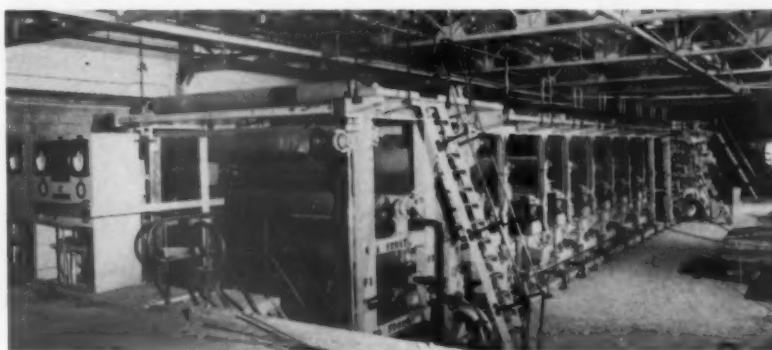
... INDUSTRY GROWTH

The Black-Clawson International Ltd. pulp preparation system consists of a continuous Hydrapulper, a batch Hydrapulper, screens, deckers, stock cleaners, and refiners. Stock preparation also includes a Petrodiffusion system for asphalt dispersion.

The Black-Clawson machine has seven vats. Five are counter-flow, two are direct flow. The Millsbaugh dryer section has 53 dryers, 48 in. dia. designed for 75 psi pressure. It is totally enclosed by a Canadian Vickers Ltd. aluminum hood.

The machine will operate at speeds from 80 to 600 fpm with a finished trim of 150 in.

Some production will be used by other divisions of the Kruger Organization. Mill wrap will be supplied to Richmond Pulp & Paper Co. of Canada Ltd., Bromptonville, Que., corrugated and linerboard by Sherbrooke Paper Products Ltd., Montreal and



FINAL STAGES OF CONSTRUCTION are being made to new 150 in. trim seven cylinder machine in downtown Montreal at Turcot Paperboard Mills Co.

Toronto and Kruger Paper Co. Ltd. will use other grades.

Turcot is under general management of J. T. Dodds, who is also vice president of the parent organization.

Resident mill manager is Douglas Duncan, formerly with Standard Packaging. Charles H. Kirk, general sales mgr., formerly was with Canadian International Paper. ■

Nova Scotia pulp mill poises for startup



HOLLAND

CLAYPOOL



LLOYD



HENDRICKS



FLEMING

MOORE

NEW YORK—Karl A. Clauson president of Stora Kopparberg Corp. and of Nova Scotia Pulp Ltd., announces that the Nova Scotia Pulp Ltd.'s new multi-stage soda base sulfite market pulp mill at Hawkesbury, Cape Breton Island, is expected to start up as scheduled on Jan. 2.

The new process, as introduced first in the Stora mill at Skutskär, Sweden, has been named the Storaite multi-stage pulping process and is the result

of many years of research in Stora laboratories. It is suitable for all species but main fiber used at the mill on Canso Strait will be Eastern Canadian spruce.

Walter Holland, general manager; Charles H. Claypool, mill manager; William McKee, general supt.; Henry Renault, pulping supt.; Holland McSorley, resident engineer; Kingsley Churchill, technical control supt., and others of the key staff have been ex-

tremely busy these recent weeks. In recruiting and interviewing staff, Carvel Lloyd, personnel supervisor, has been especially active.

Jim Hendricks is resident engineer for Charles T. Main of Boston on construction. P. C. "Red" Fleming is project manager and W. H. Moore, assistant project manager, for Cape-Tide-water, the contracting firm created by Tidewater Co. of Virginia and E.G.M. Cape of Montreal. ■

Consolidated Paper starts up continuous digester

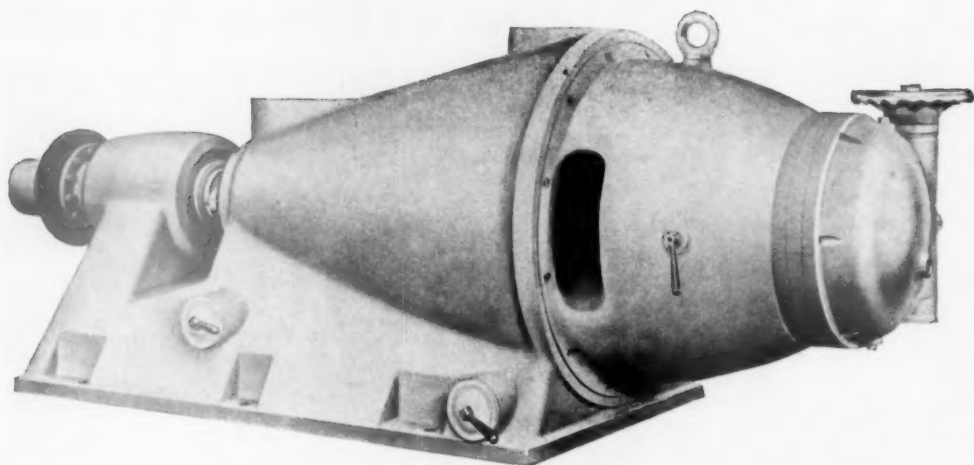
THREE RIVERS, QUE.—A new Kamy 300 tpd continuous digester has made an "extremely successful startup" here at the Wayagamack Division of Consolidated Paper Corp. Ltd. This one digester replaces all eight existing batch digesters at this mill. The new digester produces unbleached kraft

pulp which is used for bag stock, wrapper and kraft specialties on two Fourdriniers and four Yankees. This division also makes newsprint.

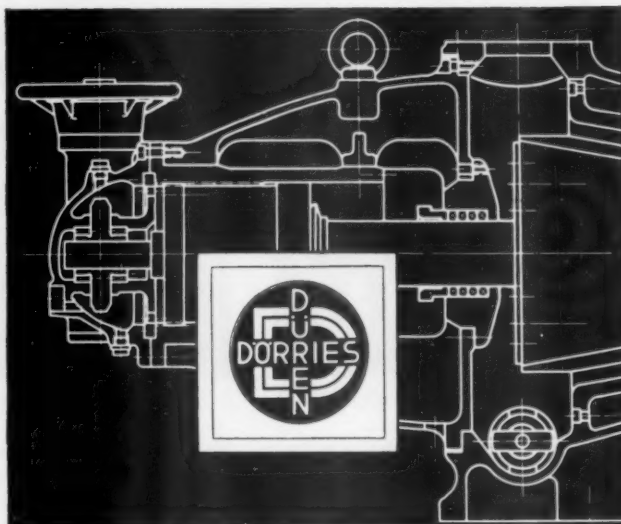
The Kamy digester is of standard type with a diffusion extraction system. It stands about 100 ft. high with a diameter of 13 ft.

The batch digesters have been in service since 1945 and corrosion had reduced shell thickness to the point where replacement was necessary.

This is the sixth Kamy digester in Canada. Two are in Hinton, Alberta, two at Castlegar in British Columbia and one at La Tuque, Que. ■



THE NEW DÖRRRIES-REFINER



- can be supplied in 3 sizes for a power consumption from 35 HP to 175 HP.
- Sturdy closed design.
- Refining fittings of steel casting, basaltic lava and/or special knives specifically designed for the refining process in question.
- Extra strong bearings with reliable oiling system and stationary inspection glasses.
- Exact setting precision graduated either by hand wheel or electrically.

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Morey Paper Mill Supply Company

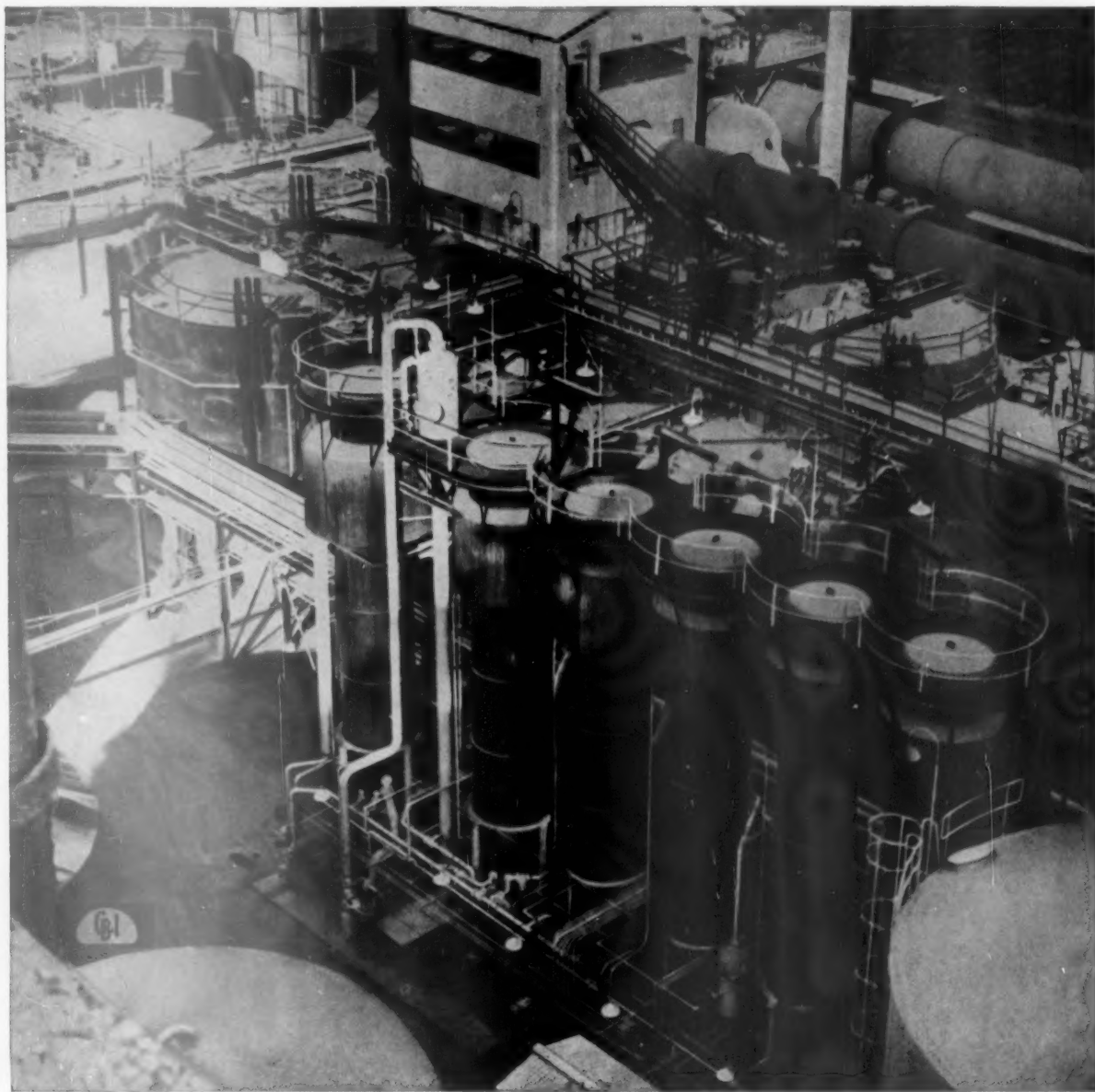
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Recovers 99.9% of the Processing Chemicals ...but that's only part of the story

Recovering more than 99.9% of the process chemicals and collecting waste heat, with low-pressure exhaust steam, are the remarkable, highly efficient accomplishments of this CB&I-designed sextuple effect evaporator.

Installed at Fibreboard Paper Products, Antioch, Calif., the evaporator bodies were fabricated with support legs attached, for fast erection outdoors. Corrosion in critical

areas is kept under control by stainless steel tubes and stainless Horton-clad® shells, heads and tubesheets.

The highly efficient design includes CB&I patented integral preheaters. They reduce steam requirements and improve evaporator capacity. Some 380,000 gals. of water daily can be boiled off from the liquor, using only 1 lb. of steam for each 5 lbs. of water evaporated. Patented entrainment separators re-

cover all but a minute quantity of the processing chemicals.

To get full details today, write Chicago Bridge & Iron Co., 332 South Michigan Ave., Chicago 4, Ill. Offices and subsidiaries throughout the world.

CB&I

...INDUSTRY GROWTH

.... BRIEFS

IP improves land site for future paper mill

GARDINER, ORE.—International Paper Co. has a dredging project at Gardiner, Ore. to elevate land near the company's sawmill and plywood plant. IP previously indicated intention of building a mill at Gardiner but has not announced when construction might begin. The company has already made provision here for a source of industrial water for the prospective pulp mill.

Material for the fill will come from the Umpqua River channel. Dredging is planned so the channel can subsequently be used as a portion of a turning basin for large ships.

Steiner spending \$500,000 to double tissue output

ALBANY—Major additions to converting facilities will begin immediately

at the Albany mill of Steiner Co., Chicago, Ill. A new head box and slice for No. 3 Yankee paper machine will permit a 50% increase in machine speed and permit the manufacture of a higher quality sheet.

Substantial changes and additions are also planned for the 165 in., No. 11 machine. New deinking and stock preparation equipment will boost the machine's output by 20% to a rate of 100 tpd.

Other improvements include additional automatic toilet tissue equipment, automatic wrappers for packaging folded paper towels, and napkins machines to handle printed, folded and dispenser napkins.

Sonoco buys Industrial Steel & Fibre, Ltd.

HARTSVILLE, S.C.—Sonoco Products Co., through its subsidiary, Sonoco Products Co. of Canada, Ltd. has acquired Industrial Steel & Fibre Ltd., which makes spirally wound

Watch for Next Issue:

Another important article on the water supply problems of the nation and of this industry will be a major feature of the Nov. 27 issue of PULP & PAPER. You won't want to miss this in view of increasing pressures upon industry in this matter and the misinformation being published on the subject which may have an important effect on your company and your mill.

tubes and cores, tubes for construction, cylindrical shipping containers and a complete range of fiber drums and composite containers.

Plans are also underway for a \$250,000 expansion of the Canadian company's facilities in Brantford, Ont. primarily for added production for its cylinder paper machine and other equipment.

..... LABOR

Labor Department investigates 12-man exemption

MIAMI BEACH, FLA.—In a speech here at the convention of International Woodworkers of America, Assistant Secretary of Labor Esther Peterson said the Department "is examining the 12-man logger exemption in the lumber industries whereby minimum wage protection is not extended to workers at logging sites where 12 or fewer persons are employed."

Mrs. Peterson also said, "It is clear

from our studies so far that the very workers in the lumber industry who are employed under the most substandard conditions—that is, the lowest wages, the most onerous hours and most hazardous working conditions—are now exempt.

"I know as well as you do," she continued, "that these workers are not the independent contractors nor employes of small farmers we are led

to believe. Most are in fact the indirect employes of the large timber operators and pulp mills."

Mrs. Peterson also extolled the recent amendments to the Fair Labor Standards Act, according to the American Pulpwood Assn., which increases minimum wage and extends coverage to more than three million workers as "a singular advance in the history of our social legislation." ■

Canadian IP signs two-year pact

MONTREAL—Another major company, Canadian International Paper, has reached agreement with the industry unions following brief negotiations.

Existing labor pacts and the unions representing some 6,000 employes in the company's five mills and New Brunswick International's mill have been renewed for a two-year period effective from May 1, 1961.

The agreement provides for a general wage increase of 5 cents an hour for the first year and an additional 5 cents for the second year. These increases will bring the

basic wage rate to \$1.98 per hour from May 1 to April 30, 1962, and \$2.03 per hour from May 1, 1962 to April 30, 1963.

Increases in company contributions to hospital insurance, shift differentials and four weeks' vacation with pay after 23 years' service were additional concessions.

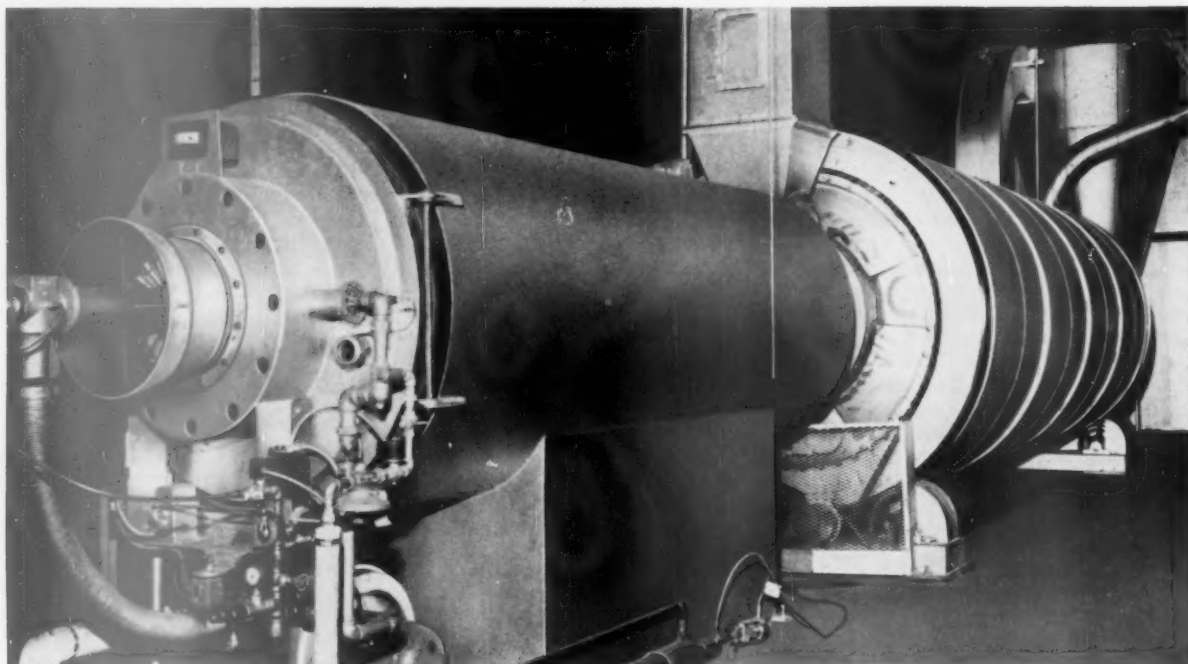
The mills affected were at Three Rivers, Gatineau, Temiskaming and LaTuque, Que., Hawkesbury, Ont., and Dalhousie, N.B. Spokesmen for the company in the negotiations were Pres. E. B. Hinman, exec. vice pres. F. L. Allen, vice pres. and gen. mgr. I. H. Peck, and

T. H. Robinson, mgr. industrial relations.

Finch, Pruyn signs two year agreement with workers

GLENS FALLS, N.Y. The strike here which has crippled operations of this mill since July 15th has been settled. According to one observer, "Both sides think they got what they wanted."

The new two-year contract runs from June 15, 1961 to June 15, 1963 and grants a general increase of 8¢/hour for 1961 and a 2½% increase effective June 15, 1962. ■



Get highest quality dried pulp at big savings with a HEIL DRYER

The simple, direct and highly efficient Heil dryer method of flash-drying has made it the standard of comparison in the drying of a wide variety of products since 1930.

It produces highest quality dried pulp and fibers because:

RAPID EVAPORATION keeps the pulp in the drying drum relatively cool. Dried pulp never exceeds 130° F. at discharge.

SHORT EXPOSURE — Fine, light particles stay in the drum for a matter of seconds . . . heavier particles remain until the proper amount of moisture is removed — up to 95 percent if desired.

THREE-PASS DRUM provides three-stage drying in a single, compact machine — requires less floor space and head room per ton of evaporation capacity than any other machine. Uses less fuel, and it's lower in price!

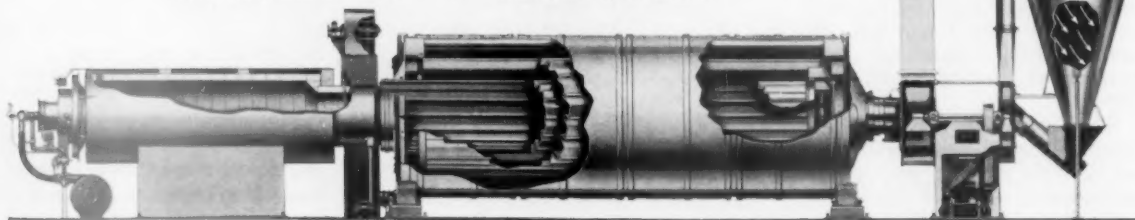
MORE PRODUCTIVE — Less warm-up and clean-out time makes a Heil dryer productive for virtually a complete shift . . . or a complete 24-hour operating period.

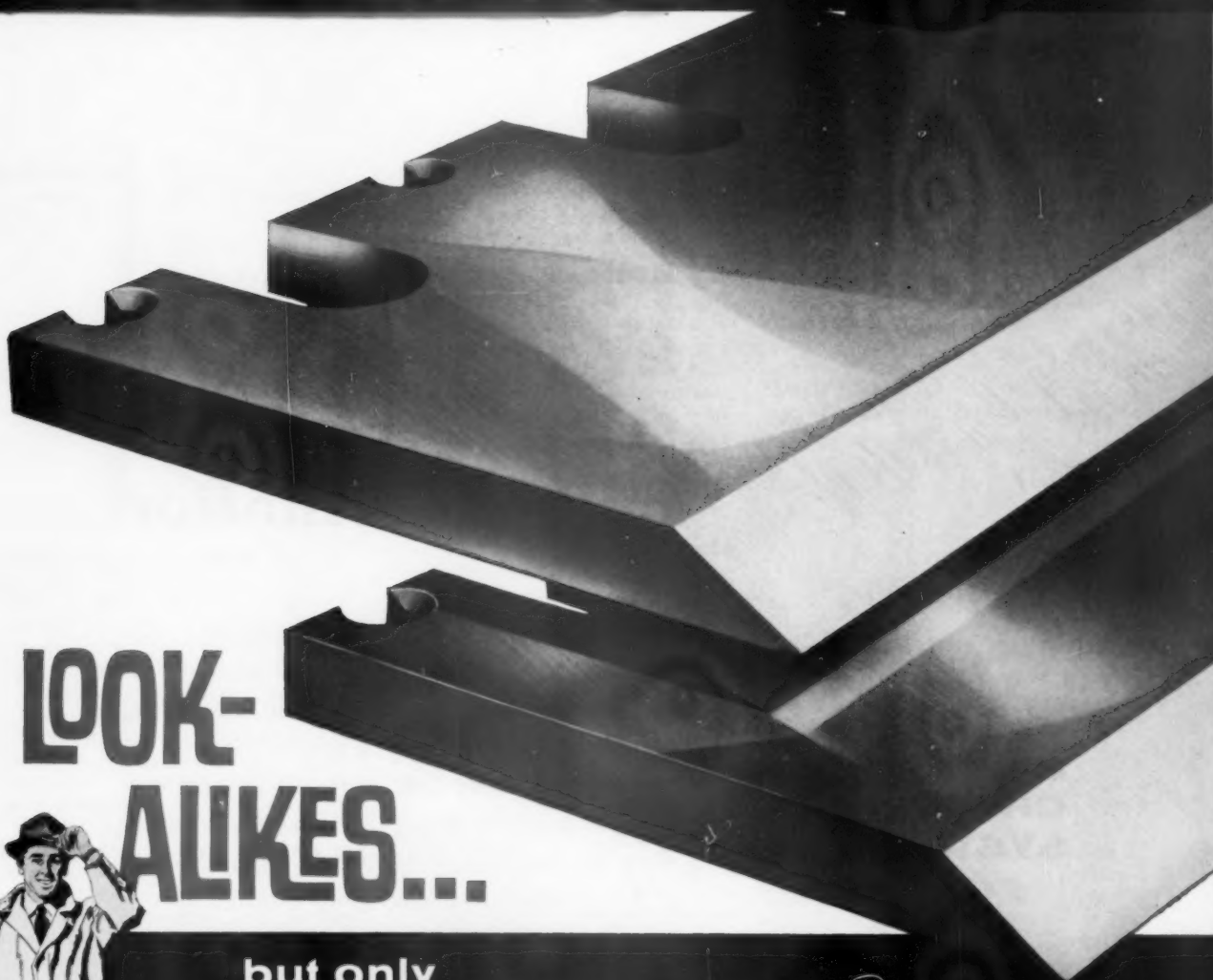
High-quality dried pulp . . . high production . . . big savings — all these are yours with a Heil dryer. Write, wire or call for more information — and names of users!

THE HEIL co.

MANUFACTURERS OF THE ARNOLD DRYER

3000 West Montana Street • Milwaukee 1, Wisconsin





LOOK- ALIKES...



but only
SIMONDS Chipper Knives
come with the

"MILLION DOLLAR" SERVICE

It's a well-known fact! Many thousands of dollars have been saved by mills with Simonds Chipper Knives and Simonds Technical Chipper Service.

Increases in yield of clean-cut, unbruised chips have ranged from 1 to 2% all the way up to a startling 30%. Savings in wood costs run into the hundreds of thousands of dollars every year.

Sound unbelievable? Why not find out for yourself!

"The Man From Simonds" knows how to squeeze out the most from any chipper operation. And Simonds Knives have the extra toughness and edge-holding quality to maintain the savings. What's more, Simonds is "right around the corner" and can give you fast, dependable delivery!

Learn the full money-saving facts. Write for details today.

LET'S LOOK AT THE RECORD:

"Simonds Chipper Service increased our chip yield 8%", *says one Southeast Mill.*

"Simonds recommended changes increased our acceptable chips by 30%", *says a New England Mill.*

"Savings of over \$50,000.00 a year were the result of Simonds technical help", *says another well-known company.*



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SAW AND STEEL CO.

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Buy through your local Simonds Distributor for

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Factory Branches in Union, N. J., Chicago, Shreveport, La., Los Angeles, San Francisco, Portland, Ore. • Canadian Factory in Granby, Que. • Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.; Heller Tool Co., Newcomerstown, Ohio; Simonds Abrasive Co., Philadelphia, Pa. and Arvida, Que., Can.

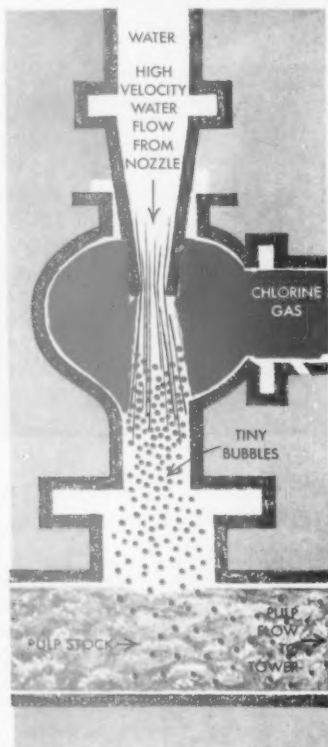
John A. Hanson, Technical Director

Badger Paper Mills reports:

27 years of trouble-free pulp chlorination

In 1934 Badger Paper Mills, Peshtigo, Wisconsin, cooperated in the first installation of the Pennsalt Dispersed Chlorine System. Dependable performance over the years has proved to Badger that here is the sure way to obtain uniform application of minute chlorine bubbles throughout the pulp slurry. It has meant improved pulp quality, low maintenance and production line efficiency.

PENNSALT DISPERSED CHLORINE SYSTEM



A high pressure water jet, issuing from a nozzle, makes impact with the flow of chlorine gas to disperse it into countless tiny bubbles which readily go into solution as they enter the pulp flow.

Partial list of other mills using the Pennsalt Dispersed Chlorine System:

Rayonier, Inc., Port Angeles, Wash.; Port Alice and Woodfibre, B. C.
Crown Zellerbach Corp., West Linn, Ore.; Camas, Wash.
Weyerhaeuser Company, Longview, Everett, and Cosmopolis, Wash.
Puget Sound Pulp & Timber, Bellingham, Wash.
MacMillan, Bloedel & Powell River Co., Harmac and Port Alberni, B. C.
Bergstrom Paper Co., Neenah, Wis.
North Western Power & Pulp, Ltd., Hinton, Alberta
Scott Paper Co., Everett, Wash.; Mobile, Ala.
Brunswick Pulp & Paper Co., Brunswick, Ga.
Buckeye Cellulose Corp., Foley, Fla.
Marathon Corp. of Canada, Ltd., Marathon, Ont.
Several European mills are also using the Pennsalt Dispersed Chlorine System.

To learn more about Pennsalt Dispersed Chlorine System, or for technical assistance on particular problems, call or write



INDUSTRIAL CHEMICALS DIVISION PENNSALT CHEMICALS CORPORATION

IN THE WEST: 2901 TAYLOR WAY, TACOMA, WASH.
IN THE EAST: 3 PENN CENTER, PHILADELPHIA 2, PA.

PENNSALT CHLORINE AND CAUSTIC SODA ARE MADE AT: CALVERT CITY, KY. * PORTLAND, ORE. TACOMA, WASH. * WYANDOTTE, MICH. * MEXICO CITY

Ball valves

... have air and electric operators



Applications: For automatic and remote on-off flow control.

Features: Both types of operators are available integrally with the valve or separately for valves already in service.

Pneumatic operators are available in three sizes: valves from 1/4 in. through 2 in. All operators mount directly on the valve to simplify arrangement alignment and reduce space requirements.

Electric operators are of weather-proof and explosionproof construction with stainless steel output shaft, aluminum housing, and hardened steel gear train. Operators are clamp-mounted directly to the valve body.

Specifications: Ball valves come in sizes from 1/4 through 2 in. for pressures to 1,000 psig and temperatures to 550°. Carbon steel, stainless, bronze and aluminum valves are stocked as standard with Teflon, reinforced Teflon, Buna-N, neoprene and secondary "Fire-Seal" seats.

Supplier: Hills-McCanna Co., 400 Maple Ave., Carpentersville, Ill.

Paper roll clamps

... can rotate load



Applications: For handling rolls from 10 in. to 60 in. dia.

Advantages: Rotating paper roll clamp is attached to fork lift truck.

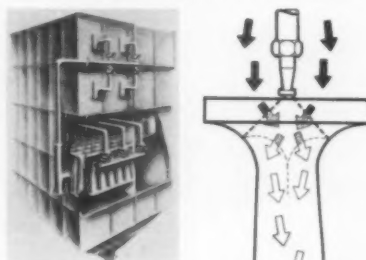
Available with 180° to 270° rotation, these clamps have capacities of 3,500 lb., 5,000 lb., and 6,500 lb. The company says a year of advance testing produced a design to meet requirements of heavier and more tightly wound rolls now being produced by the industry. Full hydraulic control of clamping action permits handling various diameter rolls without manual clamp arm adjustment.

Hydraulic cylinders coupled with rack-and-pinion drive give maximum rotating torque, according to the supplier. Clamp arm return springs are eliminated in this design because pivoted arm is controlled at all positions by two heavy duty cams and cam followers. Heavy-duty pad stop distributes stress to the clamping arm, not the pad pivot point.

Supplier: Clark Equipment Co., Industrial Truck Division, Battle Creek, Mich.

Venturi scrubber

... separates solids from gases



Applications: For separating entrained solids from high-temperature gases.

Advantages: Scrubber has low pressure drop and low water requirements. It subjects exhaust gases to double scrubbing action as gases pass through bank of venturis. At each venturi, gas is sprayed at entry and as it passes through an inverted cone formed by rebounding water from mouth to throat of venturi.

Supplier: Buell Engineering Co., Inc., 123 William St., New York, N.Y.

Mount Hope rolls

... in two new sizes

Applications: For 3 in. and 5 1/2 in. requirements on paper machines.

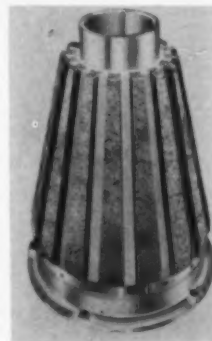
Advantages: The company says its 5 1/2 in. role supplies a need for roll size in between 4 1/2 in. and 6 1/2 in. existing units. The 3 in. ball-bearing role replaces an existing bushing-type unit. Ball bearing operation of the rolls will allow faster speeds than with the older type. The company says its 3 in.

role will be most used on narrow paper film and foil converting and printing machines. This role has improved seal and sleeve holding device, which soon will be incorporated into the 4 1/2 in. unit.

Supplier: Mount Hope Machinery Co., 15 Fifth, Taunton, Mass.

Lava tackle

... for maximum fiber development



Applications: For refiners.

Features: Production experience, says the maker, indicates that the Stock-Maker refiner with this new lava tackle gives fiber treatment comparable to a conventional stone roll multiple bedplate batch beater. Results are obtained at relatively moderate capital costs, they say, and at low energy requirements per ton of production. In addition, the refiner features continuous production.

Specifications: Lava used in the fillings is highest grade basalt imported from West Germany.

Supplier: Morden Machines Co., 3420 S.W. Macadam Ave., Portland 1, Ore.

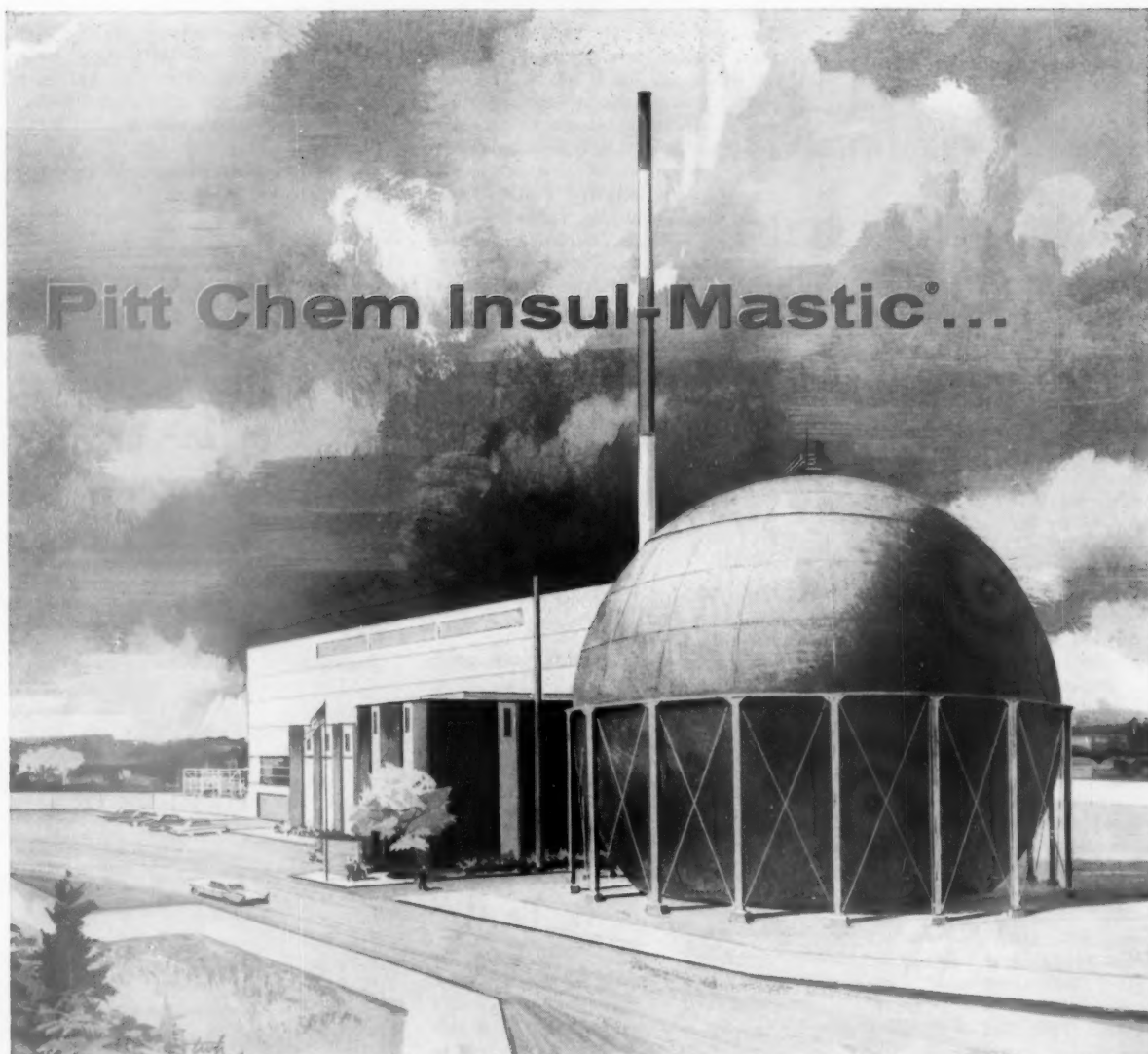
Piping offers

... two-side protection



Applications: For anti-corrosive chemical flowlines.

Advantages: Pipes are coated inside and outside with ... turn to p. 126



Pitt Chem Insul-Mastic®...

Consumers Power Company's Big Rock Point Nuclear Plant near Charlevoix, Michigan

insulation and corrosion protection for the Atomic Age

Providing corrosion protection and insulation for a nuclear containment vessel was a new assignment for Pitt Chem, one that demanded topflight results in both requirements. Because of its service-proven history in solving dual-purpose coating and insulating problems, Pitt Chem Insul-Mastic 553 was specified for use on this nuclear energy plant presently under construction.

Insul-Mastic 553, Gilsonite asphalt insulating mastic is a tough, durable coating containing a high percentage of granulated cork. With 553 you get a high degree of thermal insulation and excellent condensation corrosion control with a *single* coating.

Pitt Chem Insul-Mastic 553 solves dual-purpose insulation-corrosion problems effectively and . . . at significantly lower cost. Consult the Yellow Pages of your local telephone directory for your nearest Pitt Chem Distributor; and while doing so, ask him about Pitt Chem's complete anti-corrosion service. 3764



PROTECTIVE COATINGS DIVISION

**PITTSBURGH
CHEMICAL CO.**

GRANT BUILDING PITTSBURGH 19, PA.

A Subsidiary of PITTSBURGH COKE & CHEMICAL CO.

Pulp & Paper Know-How Associates formed



TUCKER BOLTON KIELY KENT



LIBBY



NADELMAN



WEBSTER



BACHMAN



FLETCHER

HOLYOKE—A group of distinguished retired pulp and paper specialists have pooled their knowledge of the industry into Pulp & Paper Know-How Associates.

Explains C. H. "Bert" Kent, vice president and managing director of the new firm, "Since the widespread adoption of the policy of retirement at the age of 65, much has been said about the resulting waste of ability and experience. Our group has been organized to offer to the industry the wealth of this experience and ability represented by a carefully selected group of outstanding men who have recently retired. Their combined experience covers the industry."

The new firm differs from other consulting firms, explains Mr. Kent. "We do not propose to compete for the type of work now being well done by a number of consultants, but

rather do offer an experienced and very personalized outside viewpoint on the smaller but nonetheless important problems of everyday operation. We offer valuable service in fields of management, production, sales, product engineering, development, accounting, personnel procurement, industry mergers, etc.

Officers of the new company are Philip S. Bolton, president, retired research director of Robert Gair Co.; Mr. Kent, retired resident manager, Hercules Powder Co., Inc.; Helen U. Kiely, secretary-treasurer, retired technical director, American Writing Paper Corp.

Directors of the firm include Albert E. Bachman, retired past president of TAPPI and PIMA; H. J. Buncke, retired vice president, Oxford Paper Co.; Colonel R. C. Charron, retired,

U.S.A.; Saxton W. Fletcher, retired president, J. O. Ross Engineering Co.; Professor C. E. Libby, retired director of North Carolina State College of Forestry; Thomas Mangin, retired manager, International Paper Co.; Dr. Alfred H. Nadelman, retired head of the dept. of paper technology, University of Western Michigan; Clifford M. Patch, retired technical director of Eastern Corp.; Lawrence Shattuck, retired vice president, Strathmore Paper Co.; Rufus L. Sisson, Jr., retired president of Racquette River Paper Co.; E. C. Tucker, retired vice president of Chemical Paper Mfg. Co. and Crocker McElwain Co., and William T. Webster, retired director, pulp and paper division, H. K. Ferguson and Co.

Headquarters of Pulp & Paper Know-How Associates are at P.O. Box 667, Holyoke, Mass. ■

Eastex names Ray Brown vice president

EVADALE, TEX.—Ray Brown, resident manager of the East Texas Pulp and Paper Co. here, has been elected a vice president. He has been resident manager since June of this year, has been with Eastex since April, 1954 when he began work as superintendent of the pulp mill.

Mr. Brown was made assistant resident manager of the mill in 1956 and his promotion to resident manager was made at the time that A. G. "Buff" Natwick, former resident manager, retired in June.

A native of Fisher, La., Mr. Brown began work in 1925 at the Calcasieu

Paper Co. in Elizabeth, La. and later moved to Oregon, where he joined Crown Zellerbach Corp. He became pulp mill supt. at their St. Helen's Oregon mill. After 23 years in Oregon, Mr. Brown returned to the East Texas area in 1954, several months before start up of the mill here. ■

Andrews and Kyles resign from MB&PR

By CHARLES L. SHAW, Canadian Editorial Director

VANCOUVER—After a series of resignations of top executives a few weeks ago, it had been generally assumed that the turmoil resulting from the merger of Powell River Co. with MacMillan & Bloedel was over and that everyone was reasonably happy, including the remaining high-ranking former Powell River men. However, Dr. I. H. Andrews and J. A. Kyles, vice presidents who were formerly

with Powell River Co. for many years, have now resigned.

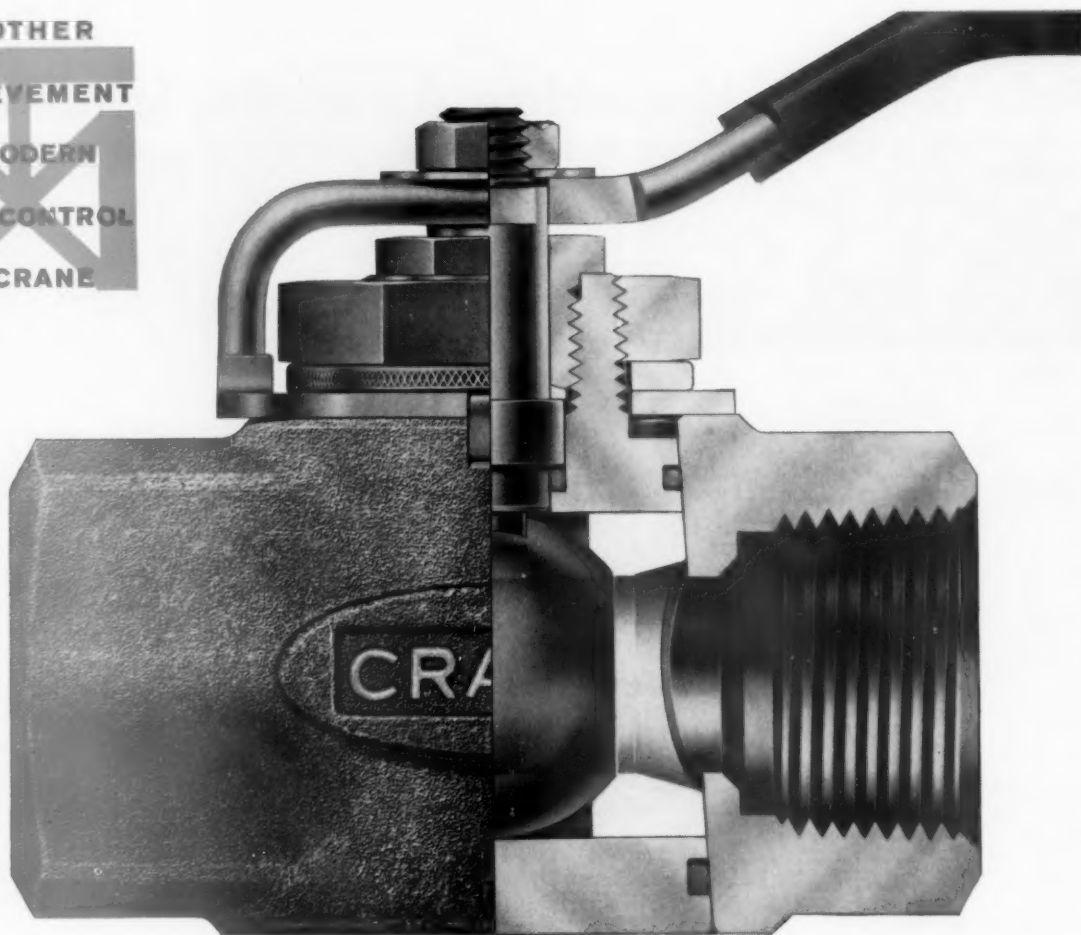
Harry Andrews, who joined Powell River Co. as plant chemist in 1920 and rose to become vice president, research, development and planning, is one of the best known figures in the Canadian industry and only a few months ago was awarded an honorary life membership in the Canadian Pulp & Paper Assn. in recognition of

his contributions to the technology of the industry and the growth of his company. When he joined Powell River Co., technical research was in its infancy and it was under his direction that the company's control department was organized.

"Jock" Kyles joined Powell River Co. in 1925 and was one of the organization's financial officers before

... turn to page 35

ANOTHER
ACHIEVEMENT
IN MODERN
FLOW CONTROL
BY CRANE



***this
ball
beats
all!***

CRANE BALL VALVES are engineered for superior flow control and minimum-maintenance operation. The secret of this valve's all-around outstanding performance is its beautifully simple, Crane-designed tapered cartridge containing all the working parts. While the valve body remains in line, acting as a pipe connection, the entire cartridge may be removed from the bottom, quickly and easily, for fast exchange or simple, low-cost maintenance.

Precision pre-loaded Teflon* seats assure bottle-tight closing in either direction with a quick, easy quarter turn of the bright, Crane orange insulated handle. The self-aligning, precision machined ball is polished and chrome-plated to reduce friction and wear on the self-cleaning seats. All steel parts are plated for corrosion resistance. Crane Ball Valves handle fluid, gas and air services from vacuum to 800 psi and temperatures from -40 to 400F. Available now from your Crane Distributor for prompt delivery—sizes from 1/4" to 2", screwed ends, in bronze, carbon steel, and Type 316 Stainless.

*Registered DuPont trademark.

at the
heart
of home and
industry

CRANE

valves
piping • electronic controls
plumbing • heating
air conditioning

Contact your Crane Distributor or write: Crane Co., Industrial Products Group, 4100 S. Kedzie Ave., Chicago 32, Ill., for illustrated brochure ADB 1001 with complete information on Crane Ball Valves. In Canada: Crane, Ltd., 1170 Beaver Hall Square, Montreal.



For over 36 years, Industry has looked to West End Chemical Company as a dependable source of chemicals. Soda ash, sodium sulfate, salt cake, quicklime, hydrated lime and borax are included in the product line.

Located in the Mojave Desert some 190 miles north-east of Los Angeles, West End's Searles Lake location has long been recognized as one of the world's largest sources of inorganic salts. Searles Lake, which is now dry, was formed through the ages by waters carrying small quantities of the various salts in solution from the Sierra mountain range to what was then an inland sea. Subsequent volcanic activity blocked off the flow of these waters, leaving the lake to evaporate to its present day level. These acts of nature caused enormous quantities of inorganic salts to be left in the Searles Lake Basin.

West End's connection with Searles Lake dates back to that period following World War I when numerous companies were experimenting with various processes for extracting mineral wealth. After a number of years of experiment and research, the Hellmers Process (H. D. Hellmers, now West End Vice-President, Production) was adopted, and it is still the basis for today's operations.

Briefly described, the Hellmers Process involves the pumping of brine from the lake, treating the brine with carbon dioxide gas to form sodium bicarbonate which precipitates out. In the carbonation phase of the process, the borates contained in the brine as sodium metaborate and sodium tetraborate are converted to the more acid

higher borates of sodium by the reaction of CO_2 , eliminating part of the Na_2O by forming NaHCO_3 . After separation of sodium bicarbonate from the carbonated brine, the latter is mixed with additional untreated brine from the lake in such proportions that practically all of the borates in the mixture are in the form of sodium tetraborate. This results in a state of supersaturation with respect to sodium tetraborate, which is crystallized from the mixture by the simple process of cooling and agitating. After settling, the brine is sent to the sodium sulfate recovery units and the settled borax recovered and refined. The bicarbonate recovered in the first step of the process is filtered, washed free of impurities, and converted to various grades of soda ash.

For a number of years soda ash and borax were West End's sole products. In 1938, installation of a hydrator made it possible to market hydrated lime.

In 1955, encouraged by the growth of the kraft pulp and detergent industries, West End made its first offering of salt cake and anhydrous sodium sulfate. In the intervening years, West End has become a major national source of these chemicals.

The new West End soda ash plant now under construction at a second natural source in Wyoming is scheduled on-stream in 1962. Produced under the same uniform management and controls of the parent plant, high quality West End soda ash from Wyoming will be available to industry in an ever-broadening market.

WEST END CHEMICAL COMPANY
Division of Stauffer Chemical Company

Stauffer
CHEMICALS

636 California St., San Francisco, Calif. • Plant, Westend, Calif.

SODA ASH • BORAX • SODIUM SULFATE • SALT CAKE • HYDRATED LIME • QUICK LIME



Since mid-1955, West End has been recognized as a major producer of high-quality salt cake. Original production capacity of salt cake at the Westend plant was 50,000 tons annually, but with completion of a second unit in the fall of 1956, production capacity was increased to 120,000 tons per year. With completion of a third unit in 1961, capacity will increase to 200,000 tons per year. Today, West End is solidly qualified to handle the complete requirements of its customers dependably, economically and efficiently. West End salt cake is being used to a wide extent in kraft paper mills in the Pacific Northwest and the Southeastern section of the United States wherever a sulfate pulp process is utilized.



SALT CAKE

TYPICAL ANALYSIS

	Typical %	Guarantee %
Na_2SO_4	99.57 - 99.87	99.5 Min.
NaCl} . . . . .	.06 - .14 . . . . .	.2 Max.
B_2O_3 . . . . .	.03 - .06 . . . . .	.1 Max.
CO_2 . . . . .	.02 - .04 . . . . .	.05 Max.
Na_2O} . . . . .	.05 - .09 . . . . .	.1 Max.
H_2O} . . . . .	.01 - .10 . . . . .	.2 Max.
Insoluble . . . . .	.001 - .01 . . . . .	.05 Max.

Density:

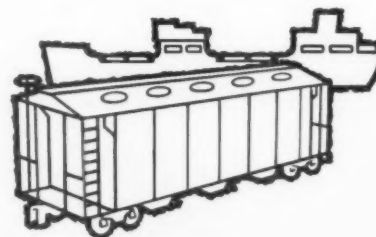
Struck Approx. 75 lbs./cu.ft.

Tapped Approx. 88 lbs./cu.ft.

Solution Clear

Color White

WEST END SALT CAKE IS MOVED ECONOMICALLY at great distances by truck, ocean vessel or by West End's own fleet of leased covered hopper rail cars. Stauffer of Canada storage depot... The West End project that solved the problems of time and cost of other means of transportation... typifies West End advance planning that provides customers with the benefits of reduced inventory requirements, lower transportation costs and prompt delivery.



Stauffer
CHEMICALS

WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY
636 CALIFORNIA STREET, SAN FRANCISCO, CALIFORNIA • PLANT, WESTEND, CALIFORNIA

LITHO IN U.S.A.

... starts on p. 31

going to Vancouver head office to become eventually vice president, administration and secretary.

Both Dr. Andrews and Mr. Kyles have resigned from MacMillan, Bloedel & Powell River Co. several years before normal retirement date. Mr. Kyles will probably join some other company. Dr. Andrews may continue in a consulting capacity with MB&PR.

Among other prominent executives

of MB&PR formerly with Powell River Co. and holding executive positions with the new corporation following the merger in 1960 who have resigned are Harold S. Foley, chairman; M. J. Foley, president; John Liersch, executive vice president; W. C. R. Jones, vice president; George O'Brien, director and several others in various management capacities.

When the resignations of Dr. Andrews and Mr. Kyles were announced,

Chairman of the Board J. V. Clyne stated that E. D. Sutcliffe, formerly general mgr., marketing, B.C. Electric Co., had been appointed executive director of planning and development of MB&PR. Mr. Sutcliffe, too, has had his experience with the repercussions sometimes caused by change in corporate control. He resigned from B.C. Electric in August when that company was arbitrarily taken over by the B.C. government. ■

Tonjes heads Southern California TAPPI

LOS ANGELES—Ernst Tonjes, chief engineer of the Pioneer Division, The Flintkote Co., Los Angeles, manufacturers of coated board, boxboard and other paperboard and roofing pulp, is the first elected chairman of the new Southern California District of the Golden Gate Section of TAPPI.

This is the newest unit in TAPPI, being officially admitted in October. Meetings will be held every second Tuesday of even-numbered months at Roger Young Auditorium, 936 West Washington Blvd., Los Angeles, beginning at 4 p.m. and including din-

ner sessions.

Other officers are: vice chairman—T. Pringle Jr., Menasha Container of California, Anaheim; secretary—D. T. Snell, Continental Can Co., Los Angeles; treasurer—L. R. Giersch, Crown Zellerbach Corp., Los Angeles; membership chairman—S. Feldman, The Flintkote Co., and publicity chairman—L. L. Larson, Potlatch Forests Inc., Pomona.

Prof. W. Whitston of U.C.L.A. is addressing the Dec. 12 meeting on industrial engineering and management problems in the industry. ■



TONJES

STRICTLY PERSONAL ...

East

C. S. Nichols has been named asst. engineer, Northern Division, International Paper Co., Glens Falls, N.Y. He was plant engineer at the company's Otis mill, Chisholm, Me.



Mr. Hayes was known in many countries of the world. He traveled extensively during the 40 years he was connected with Noble & Wood, and will be remembered by many of the old time papermakers.

Lee Diestelow has been appointed to sales, Philadelphia district, Swenson Evaporator Co. division of Whiting Corp.



Lawrence E. Davis now is product mgr., dibasic acids, industrial chemicals division, Pittsburgh Chemical Co., Pittsburgh, Pa. For the past year, Mr. Davis had been supervisor, mechanical engineering supervisor of the division.

Richard E. Sitzer now is sales mgr., Hurlbut Paper Co., The Mead Corp. He was general cost accountant for the company's plants before joining Hurlbut in 1956 as controller. ... Howard W. Duggan, asst. to the president, Stebbins Engineering and Manufacturing Co., died

Oct. 21. ... Henry W. Schmidt, vice president of manufacturing, The Upson Co., Lockport, N.Y., died Oct. 28. He joined the company in 1941 at its laminated wallboard division.

Edward G. Murray, vice president in charge of sales, printing paper division, St. Regis Paper Co., has retired. He will continue with the company as a consultant.

Dudley J. Nixon is now assistant director, paper dept., Geigy Dyestuffs. He will assist Sam S. Harkavy, director, in dyestuff and chemical sales.



Richard W. Phelps has been appointed vice president, The Black-Clawson Co. He will continue as gen. mgr., Dilts Div., Fulton, N.Y. Mr. Phelps joined the company in 1949.

Frank Hayes, Widely Known in Industry, Dies at 69

Frank X. Hayes, 69, vice president and director of The Noble & Wood Machine Co., Hoosick Falls, N. Y. died October 24, in a hospital in Cambridge, N. Y., after a short illness.



William R. Willets, asst. mgr., Technical Service Laboratories, Titanium Pigment Corp. has been awarded the Bingham Medal of the Society of Rheology, its highest award.

... turn to p. 116



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The make-up and break-up of foam

Foam, of course, is made up of bubbles. But, all bubbles do not form foam. For instance, pure water will not foam. If you take a glass or a beaker of pure water and bubble air through it, the bubbles will be large and will rapidly rise to the surface and burst. Several smaller bubbles may even join together and rise to the surface. But even these burst at the surface. There is no tendency to form foam.

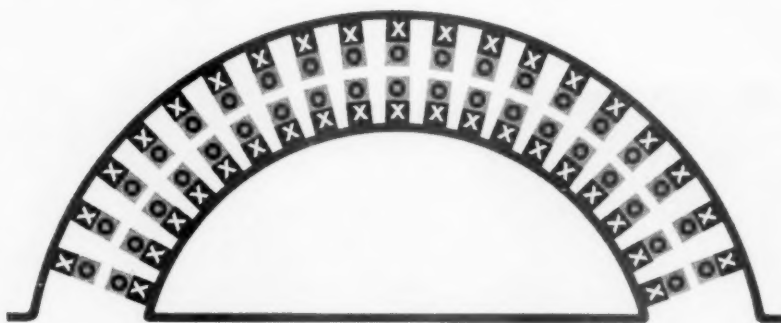
Now, add just one drop of detergent—a surface active material—to this same water, blow air through it and foam develops. The bubbles are relatively small and there is no tendency to coalesce. This foam-causing difference is due to the surface activity of the detergent molecules.

The Make-Up of Foam

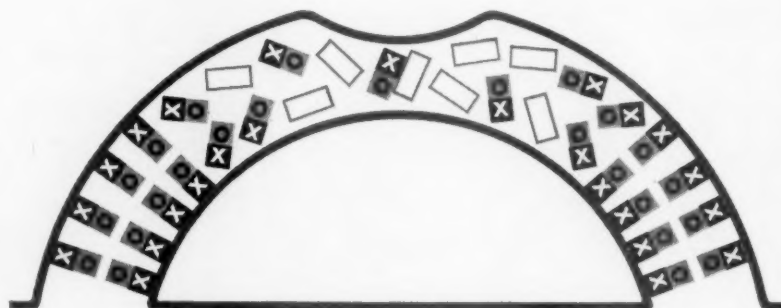
Each surface-active molecule has a “water-loving” end and a “water-hating” end. These molecules arrange themselves in an orderly fashion in the liquid film of the bubble with their “water-hating” ends toward the film surfaces and their “water-loving” ends buried in the liquid interior of the film. It is this arrangement of molecules that gives strength and elasticity to the bubbles and keeps them from bursting.

The Break-Up of Foam

Anti-foam agents act either by completely displacing the surface film or by modifying its film-forming properties so that it no longer forms a stable foam. Therefore, a good defoamer must be capable of entering the liquid interior of the bubble film and modify or break-up the molecule arrangement that sustains the bubble film. Thus, since the defoamer only has to work on only a small quantity of surface active material, only a relatively small amount of defoamer is needed.



Bubble Cross-section



Bubble with Defoamer Added

What Causes Paper Mill Foam?

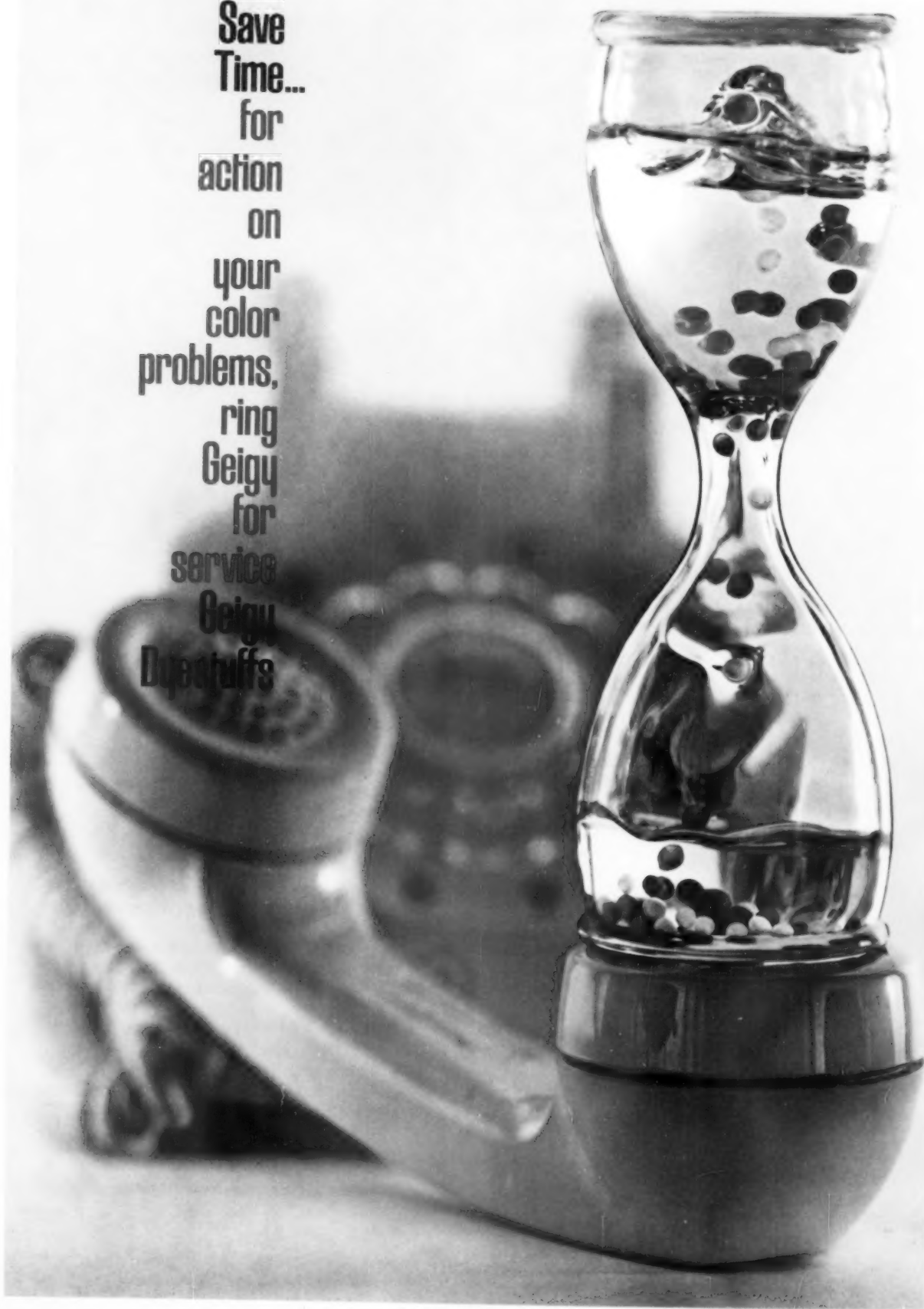
Some impurity, intentional or otherwise, must be present before foam can be produced. The most persistent foams are produced when the impurity is a surface active material such as carbohydrates, lignin, dyes, black liquor soaps, slimicides, sizes, etc. Since a foam condition can be caused by any one—or several—of

these materials, no single defoamer will fill all needs economically. Houghton's "Personalized Paper Mill Service" was instituted to provide this "diagnosis and curative" service with proven De-Airex defoamers. If you have a foam problem in your mill, call your Houghton man or write and request this technical help. It's yours for the asking and may save you untold headaches and expense. E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

H Houghton

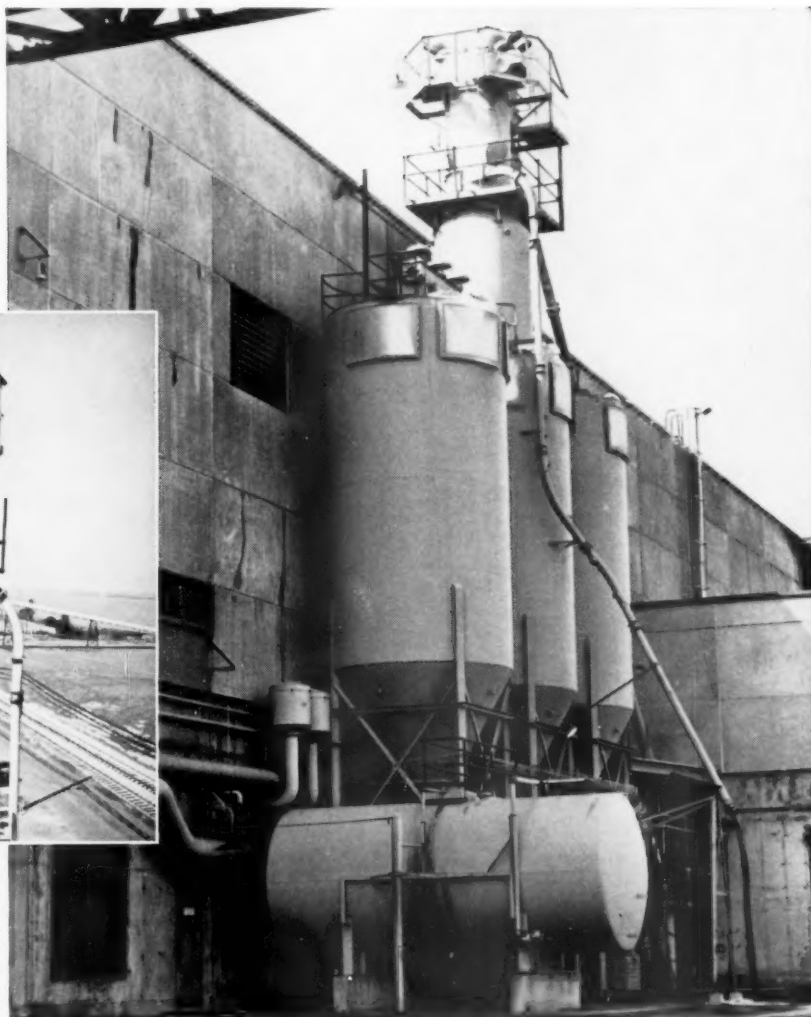
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Overall view shows conveying line running in front of storage tanks to Airveyor filter at top.



Pneumatic Conveying System Handles Both Corn And Potato Starch At Crown Zellerbach Plant

Economy, versatility and provision for future expansion are main features of system by Fuller. Bulk handling of starch from hopper-car to storage silos is being accomplished with a Fuller Airveyor® pneumatic system at Crown Zellerbach's Antioch, California, plant.

Starch shipments arrive at the plant by rail. A Fuller dual-feed unloader is quickly positioned to transfer the starch through the 6 inch diameter system a distance of 100 feet to storage at a maximum rate of 14 tons per hour.

Delivery is to three tank silos—one for potato starch—through a Fuller Airveyor Filter.

While the system was planned for corn starch handling only, its ability to handle potato starch as easily has proved a bonus value. Original planning also provided for a system capable of handling future plant expansion requirements without alteration or expansion of the Airveyor system.

If your plant is currently handling fine dry materials in bags, check with Fuller. Our engineers may be able to recommend an appropriate system that will offer results similar to those gained by Crown Zellerbach.

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See Chemical Engineering Catalog for further details and specifications.



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MEETINGS

... November

Manufacturing Chemists' Assn. 11th semi-annual meeting, New York City Nov. 21.

Pacific Coast PIMA annual fall meeting, Olympic Hotel, Seattle, Wash.—Nov. 30-Dec. 2.

... December

Virginia-Carolina TAPPI, Jefferson Hotel, Richmond—Dec. 1.

Western Forestry & Conservation Assn., 52nd Conference, Benson Hotel, Portland, Ore. Dec. 6-8.

Empire State TAPPI, Western Section, Crown & Anchor Restaurant, Niagara Falls—Dec. 6.

Gulf Coast TAPPI, Battle House, Mobile, Ala.—Dec. 6-8.

... January

Connecticut Valley PIMA, Publick House, Sturbridge, Mass. Jan. 11.

Gulf Coast TAPPI, Stafford Hotel, Tuscaloosa, Ala.—Jan. 12-13.

Pacific TAPPI, Engineering Conference, Bellingham, Wash.—Jan. 16.

Miami Valley Div., PIMA, joint meeting with Graphic Arts Assn., Carrousel Motel, Cincinnati, Ohio—Jan. 18.

Michigan Div., PIMA-TAPPI, annual papermakers get-together, Hotel Harris, Kalamazoo, Mich.—Jan. 18.

Miami Valley PIMA—Jan. 23.

Canadian Pulp and Paper Assn., technical section, annual meeting, Queen Elizabeth Hotel, Montreal—Jan. 23-26.

... February

Empire State Section TAPPI, Plastics in the Paper Industry, Crown & Anchor Restaurant, Niagara Falls, N. Y.—Feb. 7.

Paper Week: TAPPI, Commodore Hotel; APPA, Waldorf Hotel; APA, Roosevelt Hotel, New York—Feb. 18-22.

... March

Empire State Section TAPPI, Stream Pollution, Crown & Anchor Restaurant, Niagara Falls, N. Y.—Mar. 7.

Michigan Div., PIMA, Inman's Restaurant, Galesburg, Mich.—Mar. 15.

Pacific TAPPI, Shibley Award meeting, Camas, Wash.—Mar. 20.

Gulf Coast TAPPI, San Carlos Hotel, Pensacola, Fla.—Mar. 23-24.

Miami Valley Div., PIMA, Manchester Hotel, Middletown, Ohio—Mar. 27.

... April

Empire State Section TAPPI, Crown & Anchor Restaurant, Niagara Falls, N. Y.—Apr. 4.

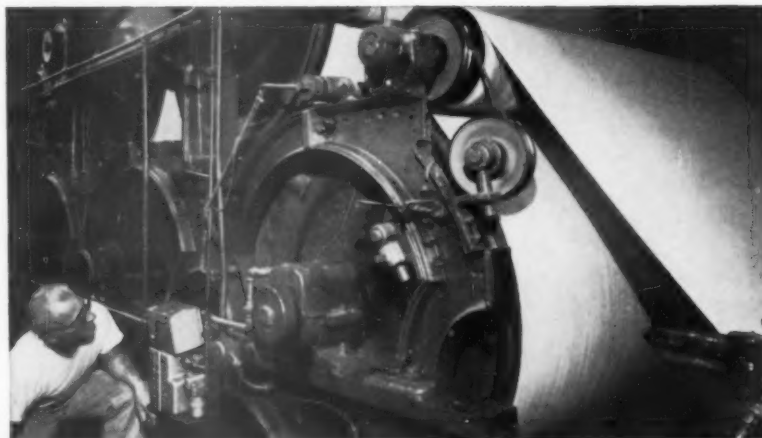
... May

TAPPI, 13th Coating Conference, Netherlands-Hilton Hotel, Cincinnati, Ohio—May 14-16.



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ONLY 0.75 ppm HAGAFILM® HELPS REDUCE STEAM COSTS, TRAP AND PIPE MAINTENANCE



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THE PLANT: The Menasha, Wisconsin, plant of Marathon Paper Company contains two veteran paper machines that have been rolling out paper for bread wrapping for over forty years. Plant personnel were on the lookout for methods of achieving production economies and reduced maintenance costs.

THE PROBLEM: Heat transfer rate at the dryer rolls could be improved, steam trap clogging and pipe maintenance due to corrosion added to overall costs.

THE SOLUTION: Constant improvement in operating procedures, modification of equipment and the use of Hagafilm achieved the desired results. Hagafilm forms a non-wettable film that not only protects all surfaces it contacts, but also cleans out old deposits.

RESULTS: Steam demand fell from 300,000 to 286,000 pounds a day which represents a substantial saving. Steam trap clogging and pipe

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KINATROL couplings are compact, field proven and dependable. General Electric has had a good deal of experience in the engineering, manufacturing, and application of packaged adjustable-speed drives. And we know how important service is to a customer.

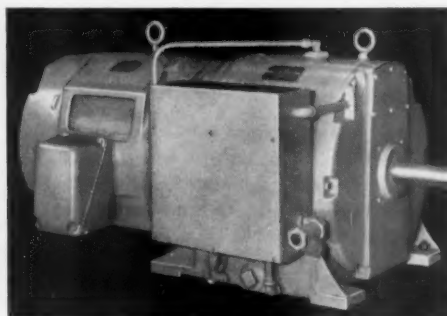
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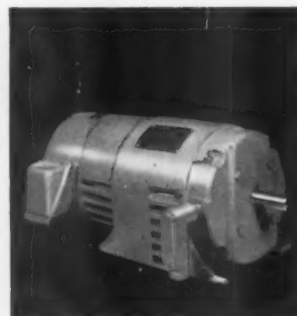
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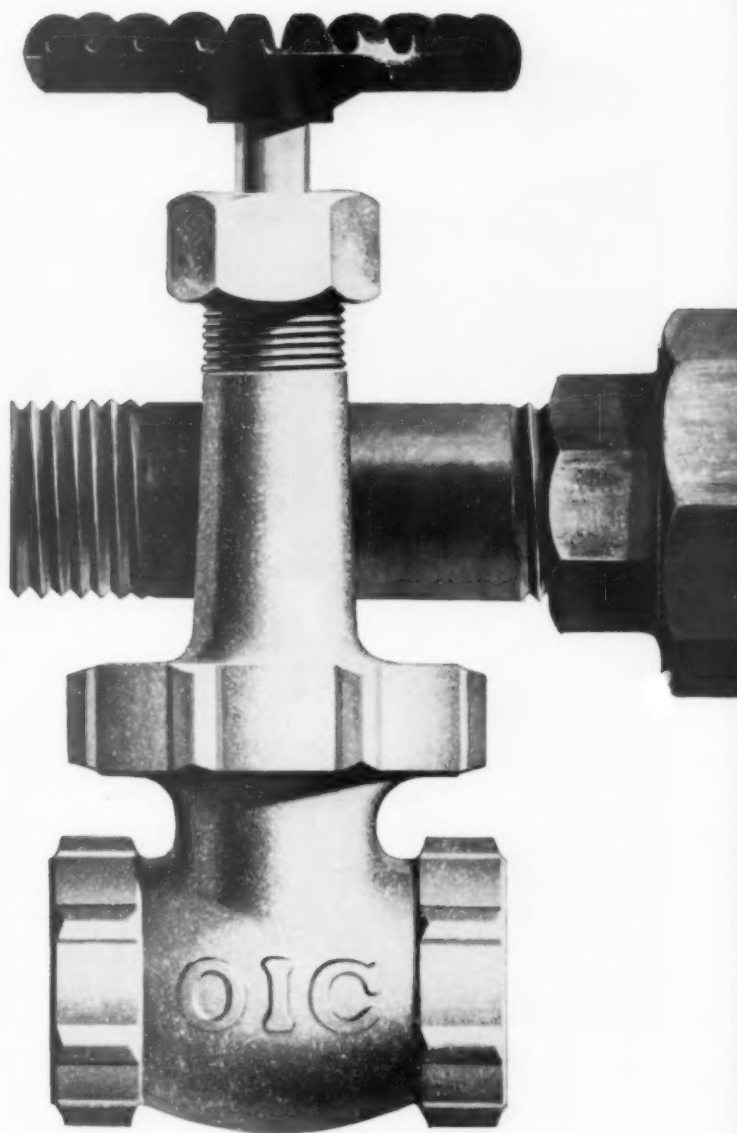
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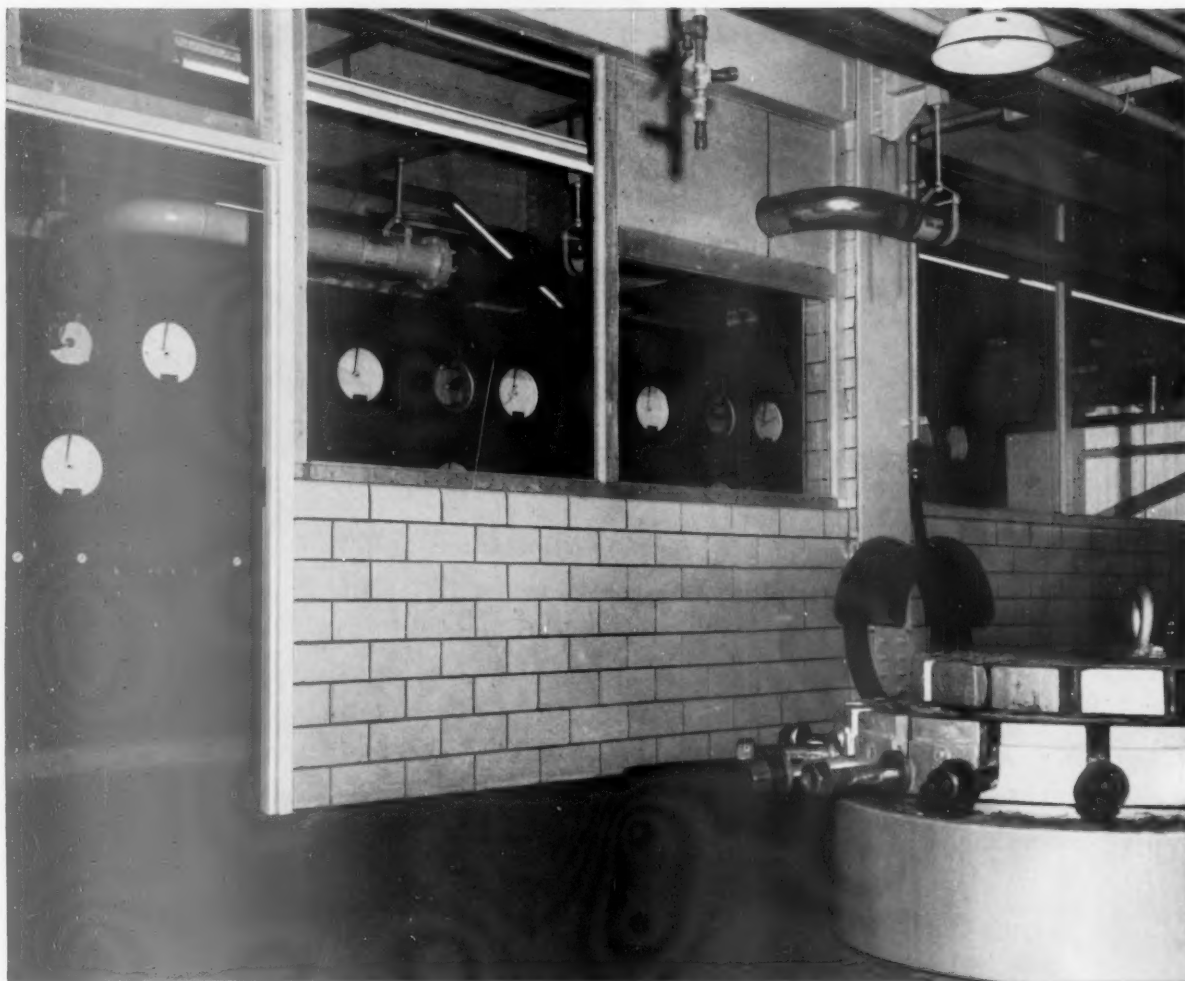
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Digester control panel at Bowaters Carolina Corp., Catawba, S. C., containing 5 Foxboro Digester Control Systems, together with liquor-fill and

chip-fill systems. Instruments shown are Foxboro cam pressure controllers, digester top-and-bottom temperature recorders, and relief flow controllers.

BOWATERS CAROLINA CORP. REPORTS:

"Uniform pulp - cook after cook with Foxboro Automatic Digester Control"

Completely automatic from fill to blow — that's the operation of the five, 4,300 cubic-foot kraft digesters at Bowaters Carolina's new mill at Catawba, S. C.

Each of Bowaters Carolina's five digesters has its own Foxboro packaged control system. To start a cooking cycle, the operator simply turns a single knob — then Foxboro takes over. Results: perfectly controlled digester circulation with virtually no liquor pull-over; uniform

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Cameron Research can help you to avoid costly mistakes when you buy winders, slitters, unwinds, tension controls, unwind brakes and accessory roll production equipment.



Cameron Research Service is the only facility of its kind dedicated to the roll production problems of producers and converters of paper, paperboard, films, foils and other flexible web materials of all types.

Cameron leadership in roll production research stems from a background which includes the most extensive line of roll production equipment, the most impressive and diversified record of successful experience, and the most abundant reservoir of authentic analytical research data in the field.

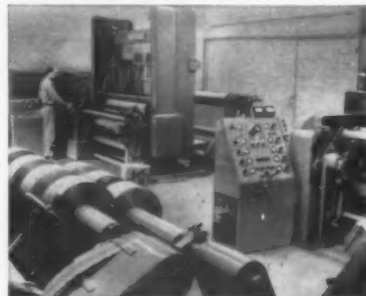
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Supported by outstanding plant facilities, Cameron Research has the additional advantage of numerous production and testing devices developed by our own engineers and not available elsewhere. Also, two departments have been fully equipped with two-drum and duplex winding systems, which are employed in engineering development studies and for actual test-runs on all types of materials.

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An experimental mill type two-drum system, fully equipped for research and development work at Cameron's plant, Dover, N. J.



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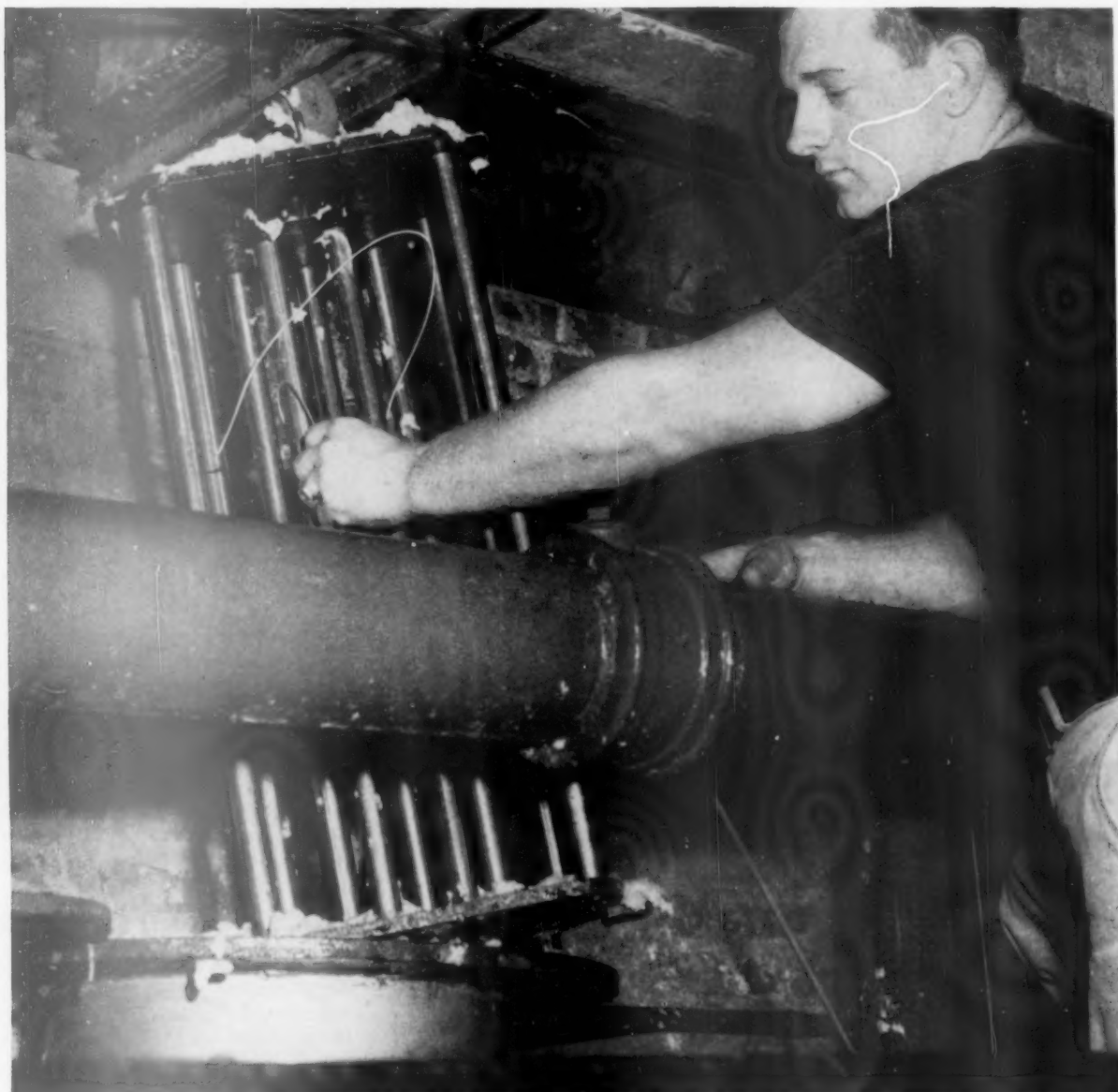
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Unwanted bailing wire—which could shut down production—is shown captured in an Eriez magnetic trap mounted in the paper slurry pipe line at Doeskin Products.

How Nickel stainless steel sets a trap for tramp iron...and high costs in pulp slurry

Pictured above is a magnetic trap used to remove tramp iron from the pulp slurry at Doeskin Products, Rockland, Delaware. This iron must be removed—otherwise the flow could be brought to a costly halt.

The magnets are enclosed in Type 304 Nickel stainless steel tubes. The traps—developed by Eriez Manufacturing Company, Erie, Pennsylvania—are installed between a large and a small hydropulper and their holding chests. Nickel stainless steel has meant con-

siderable savings for Doeskin Products because it has stood up to the attack of urea resins and alum in the slurry. This slurry had previously destroyed iron magnets.

These magnetic traps are a good example of why you should look to Nickel stainless steel for outstanding resistance to corrosion. But you can also look to the Nickel stainless steels for other good properties *in combination* with corrosion resistance—such as resistance to abrasion, erosion, impact, as well as weldability

and ease of maintenance and cleaning.

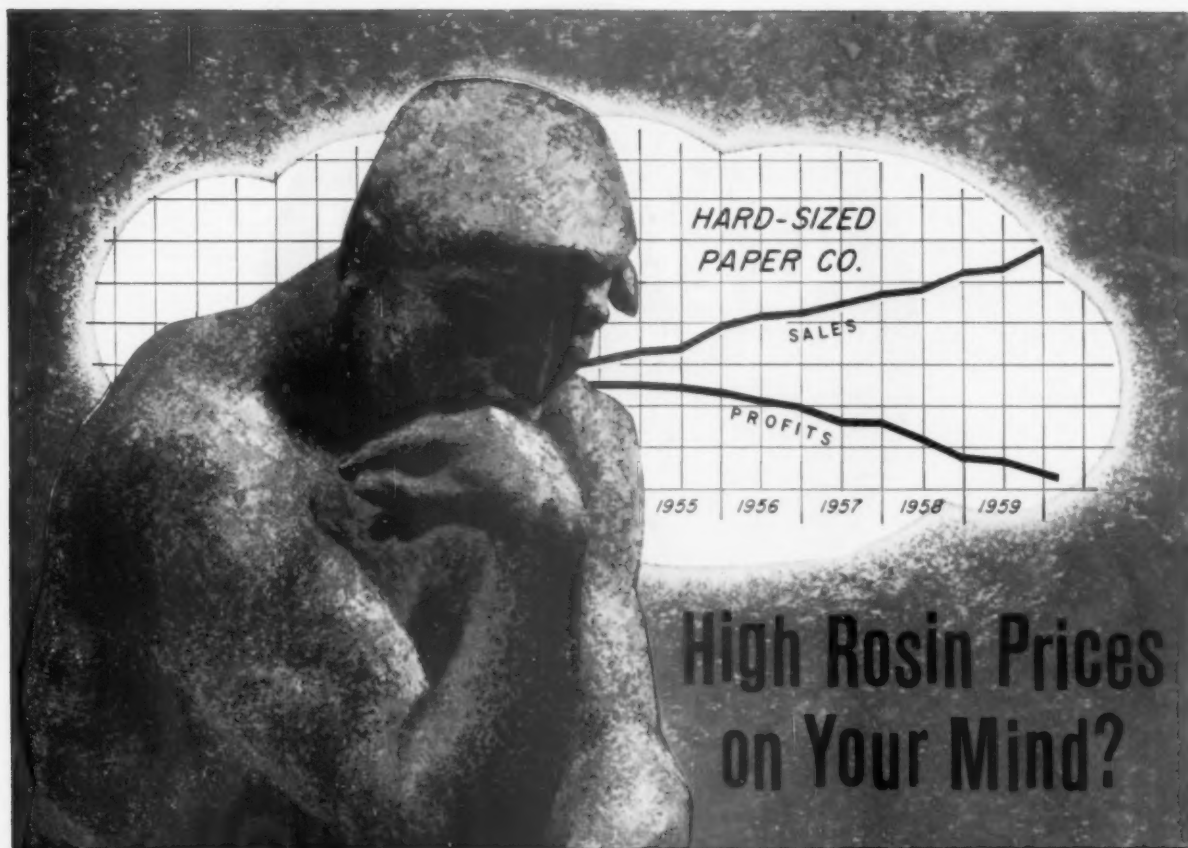
To find out just how the Nickel stainless steels can help your pulp and paper operations, write to Inco describing your design and metals needs.

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makes alloys perform better longer



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• Now, more than ever, this modified acid-curing urea-formaldehyde resin affords money-saving advantages. *WETstrez P-685 has the unique ability to reduce by $\frac{1}{3}$ to $\frac{1}{2}$ the amount of rosin needed in hard-sized paper.*

Yet paper quality is maintained, or even upgraded!

When added to starch at the size press, WETstrez P-685 improves the dimensional stability and increases the wax pick of the sheet. Higher Mullen and tensile strengths are obtained.

This improved technique allows the papermaker to decrease the amount of fortified or rosin size in the beater. This frees the stock, and faster drainage on the wire occurs. A better formed sheet at higher machine speeds is obtained.

And with no unusual broke recovery problem.

For complete technical data and information on the general technique for incorporating WETstrez P-685 into your paper manufacturing, write Reichhold for *Technical Bulletin P-12*.

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ATLAC[®] 382

GLASS REINFORCED PLASTIC

corrosion resistant
construction material
for pulp and paper
mill equipment

Where corrosion takes too great a toll—in tanks, ducts, fume hoods, chests, vapor condensers (and similar equipment)—you and your fabricator should take a good look at glass reinforced ATLAC 382 bisphenol polyester resin. It offers seven distinct advantages in pulp and paper mill operations as a construction material:

1 Corrosion resistance ATLAC 382 is virtually immune to the bleaches, acids, salts and alkalis used in paper making—at temperatures below 250°F. One example: a 4,400-gallon tank of ATLAC 382 is still in mint condition after two years of alternately storing 14% sodium hypochlorite and caustic soda.

2 High strength Pound for pound, reinforced ATLAC 382 is stronger than steel. You get the same total strength with less total weight. Examples: 30,000-gallon tanks of ATLAC 382 are completely self-supporting...and even the largest hoods need no corrosion-prone metal bracing.

3 Light weight Equipment of ATLAC 382 is generally lighter than wood, Transite, or metal equipment. In one case, a 1,000-gallon tank of 1/4" ATLAC 382 weighed 300 pounds, compared with 4.3 times that weight for alloy steel.

4 Economy ATLAC 382 equipment generally costs one-half to one-third less than rubber-lined or tiled equipment, and is normally

equal to 304 and lower in price than 316 stainless steel. It is almost always a better buy than the more exotic metals if temperatures and pressures are not too high.

5 Design flexibility There are very few practical limits in size and shape for equipment of ATLAC 382. What's more, equipment can sometimes be redesigned to take advantage of ATLAC 382's unique structural characteristics—resulting in extra simplification, practicality and cost reduction.

6 Easy installation Because of reinforced ATLAC 382's light weight, relatively few men are needed to install it. Also, since it can be joined right on the plant floor, large equipment can be shipped in sections and field-erected. Equipment is readily changed and modified. Ducting can be relocated and

reassembled without special equipment or personnel.

7 Low maintenance ATLAC 382 equipment needs virtually no periodic maintenance. It never needs painting or rust removal, always looks clean and attractive. Physical damage is easy to repair generally without down-time.

But why not get the feel of ATLAC 382 for yourself? Let us send you details on ATLAC 382, its uses in the pulp and paper industry, and a comparison of the corrosion resistance of various reinforced plastics. At the same time, we'll be glad to supply a test sample so you can prove to your own satisfaction that ATLAC 382 is well worth considering. For your sample—and data on ATLAC 382—mail the coupon, or write Atlas direct.

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Please send details on ATLAC 382, and a free test sample.

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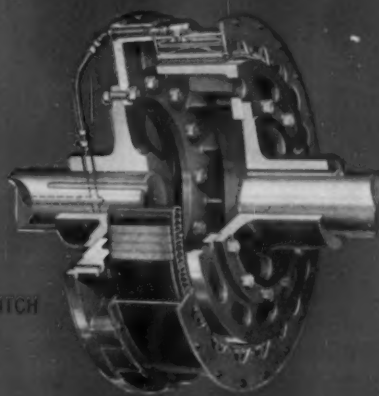
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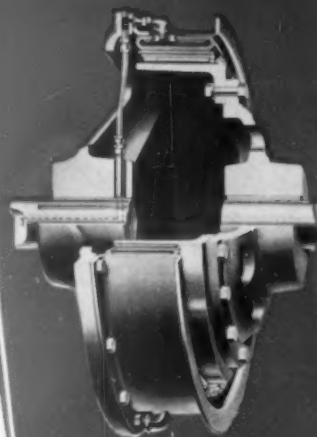
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Standard complete air clutch developed for heavy-duty dryer and calender applications. Cool-running ventilated design allows inching of most dryer sections. Available in 14 sizes with torque ratings from 27,000 to 1,800,000 in.-lbs. at 75 psi.



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CB AIRFLEX CLUTCH

Standard complete air clutch-coupling for section drive service. Available in 21 sizes with torque ratings from 2,040 to 1,130,000 in.-lbs. at 75 psi.

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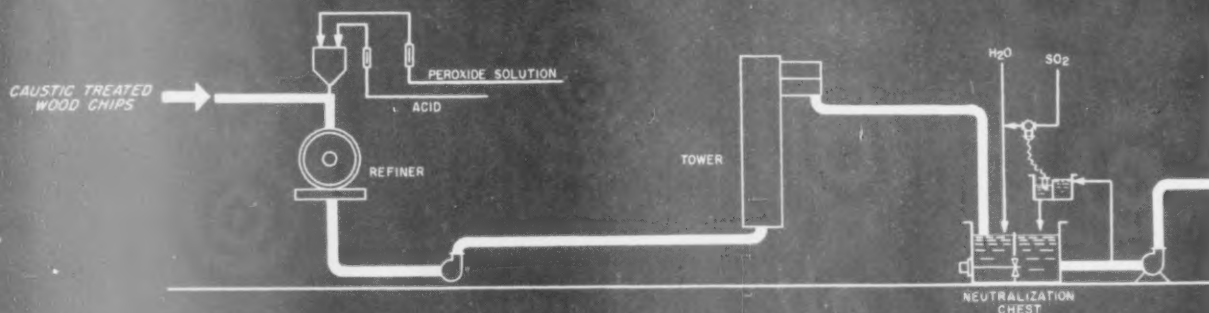
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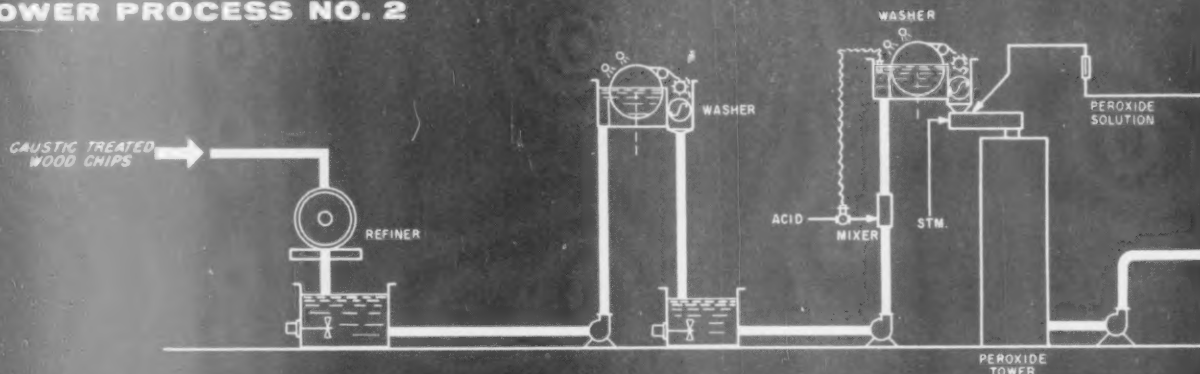
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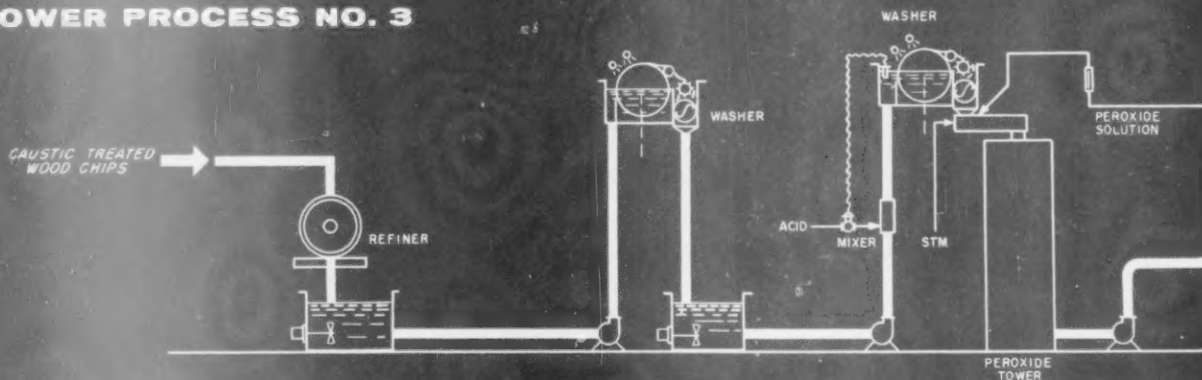
REFINER PROCESS NO. 1



TOWER PROCESS NO. 2



TOWER PROCESS NO. 3



Which process is best for experience can help you make the right ...and save you thousands of dollars in

CALL ONE OF THESE MEN...LET HIM WORK WITH YOU IN MAKING THIS IMPORTANT DECISION:

Blueprints for Better Bleaching

Du Pont experience has helped many mills make the right choice between tower or refiner bleaching for cold caustic pulp based on brightness requirements. For example:

◀ **60 brightness.** In process No. 1 at left, caustic-treated wood chips enter refiner and are bleached with "Albone" hydrogen peroxide and acid*. The use of acid controls the alkalinity of the bleaching reaction and assures maximum response from the hydrogen peroxide. Sulfur dioxide (SO_2) then neutralizes the bleached pulp and stabilizes the brightness obtained in the refiner. *Du Pont Patent Pending.

◀ **65 to 75 brightness.** In process No. 2 at left, pulp is refined, washed to remove caustic solubles, acidified with sulfuric acid to remove acid solubles, washed, and bleached in a conventional peroxide tower to desired brightness in the 65 to 75 range.

◀ **70 to 80 brightness.** In process No. 3 at left, pulp goes through the same steps as in process No. 2. Then pulp is neutralized, and bleaching is completed in a hydrosulfite tower for maximum brightness in the 70 to 80 range.

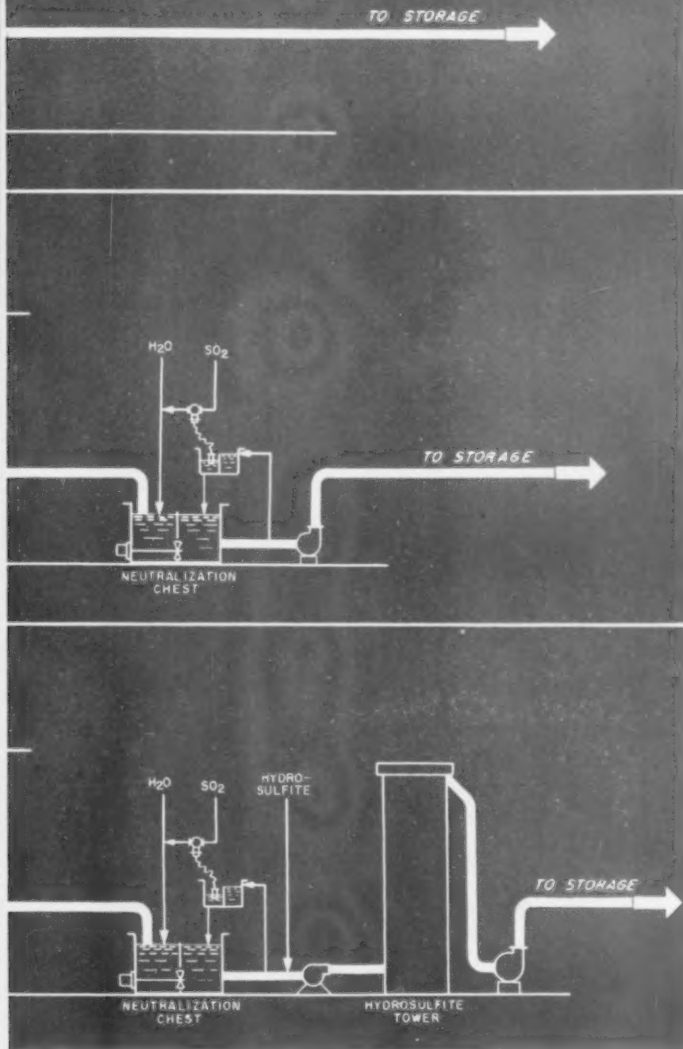
*Electrochemicals Department, Peroxygen Products Division
Wilmington 98, Delaware*

ALBONE®
hydrogen peroxide



SOLOZONE®
sodium peroxide

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY



bleaching cold caustic pulp? Du Pont choice between tower or refiner bleaching investment and chemical costs.

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Or call: A. T. Hawkinson, Wilmington, Delaware—PRospect 4-4698

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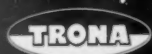
R. W. Hammond, Charlotte, N. C.—FRanklin 5-5561

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- FAST, EFFICIENT DELIVERY
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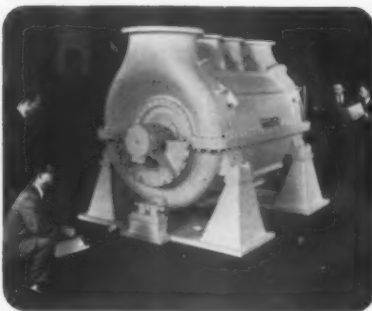
Unlimited Salt Cake reserves and uniform, dependable production at **TRONA**, Calif.... a 50% increase in Sodium Chlorate capacity at **ABERDEEN**, Miss.... plus extensive modernization at **HENDERSON**, Nev.... make Trona your best source of supply.



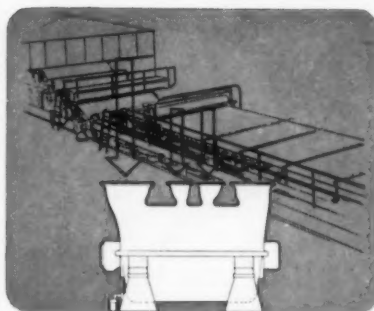
American Potash & Chemical Corporation

3000 West Sixth Street, Los Angeles 54, California 99 Park Avenue, New York 16, New York

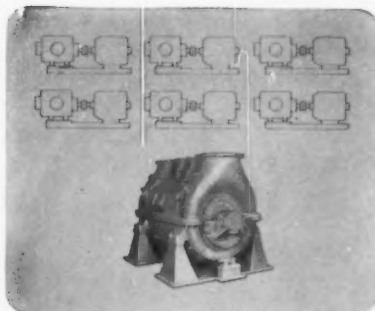
A Short Picture Story
about the
BIG NEWS
in Paper Making



1. It's the Ingersoll-Rand Central Vacuum System for paper mills — a new application for centrifugal exhausters that opens a new era for the American paper industry because...



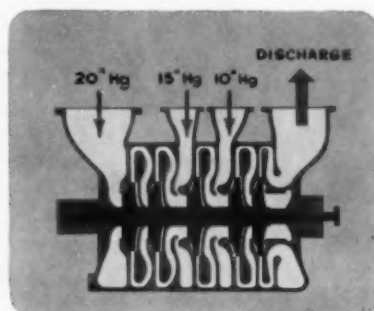
2. this one unit, with associated separators and controls, constitutes a complete system that meets all vacuum requirements for an entire paper-making machine. For example...



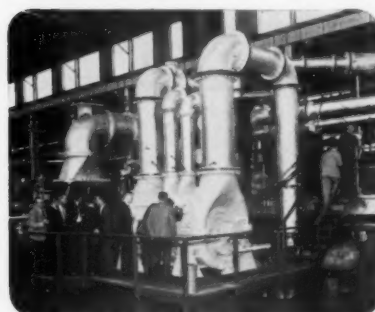
3. one 1,065-hp exhauster has taken the place of six wet vacuum pumps totaling 1,285 hp — a net saving of 225 hp! In addition to saving up to 25% on driver horsepower...



4. from 70 to 90% of its power is recovered as hot air for drying — saving the cost of steam and the capital investment for air heater equipment. All this is possible because...



5. the multi-stage centrifugal exhauster is designed with multiple inlets that provide three separate vacuum pressures as required by the installation. To see this innovation...



6. paper makers from all over the country visited an open-house demonstration at the Ingersoll-Rand plant, where the Central Vacuum System was in actual operation. Here they saw that...



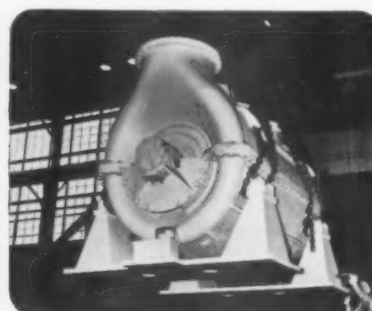
7. the centrifugal exhauster ran so smoothly that a coin stood on edge on the bearing housing without a quiver. And, through a window in the casing...



8. they could see that the discharge air was completely dry, without even a trace of moisture, making it an ideal heat source for drying. This is due to...



9. the unique primary separators designed by Ingersoll-Rand — units that proved so efficient in removing moisture that secondary separators are used only for back-up protection. Later...



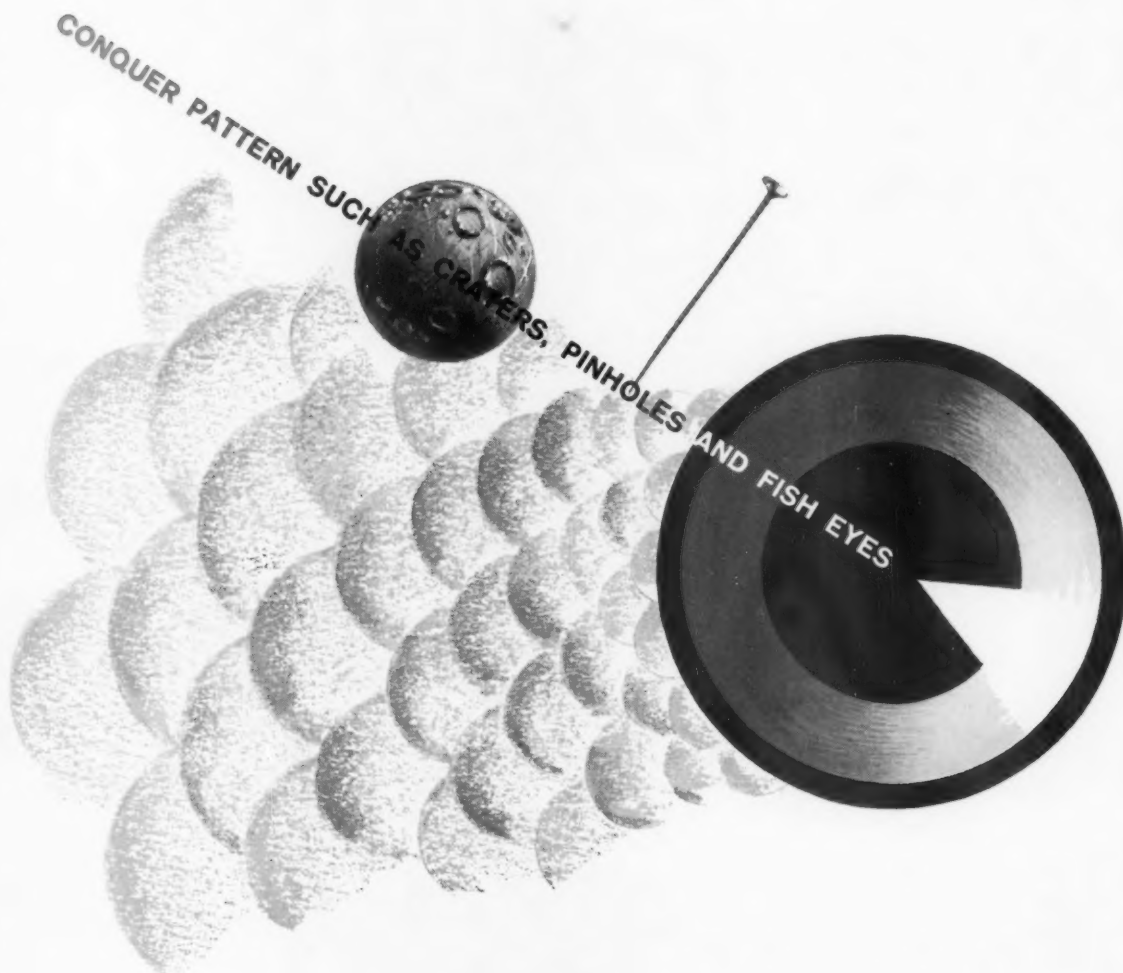
10. the first Central Vacuum System ever built in America was shipped to a leading paper mill. Two other systems are already on order. For complete information, send for Bulletin 8289.



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UP-GRADE YOUR COATED SHEET. It takes a specific antifoamer, defoamer and/or leveling agent to turn out consistently smooth, flawless coatings. So much depends on the conditions of the individual mill—the quality of the water, the constituents of the coating mix, how long and how violently the coating is agitated. By judicious application of Nopco defoaming and leveling additives, coating chemists can control the process so that foam is inhibited, entrained air is released, and the viscosity of the coating color allows optimum flow characteristics. Ask your Nopco technical representative to check your coating mix—whether protein, latex or starch—and to suggest the defoamer best for your needs.

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Defoamers
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• Metallurgical examinations are frequent.



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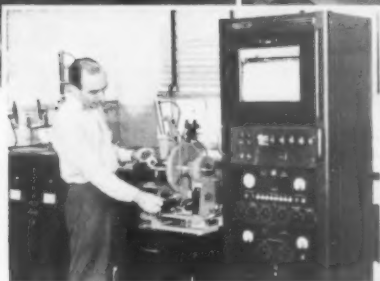
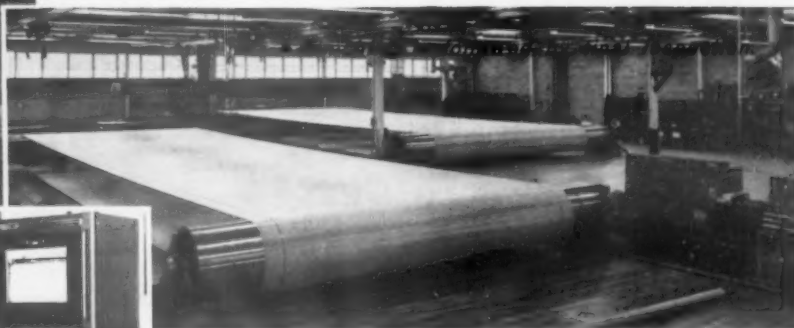
• Wire cloth is minutely inspected.



• Trained personnel seeks better processes.



• Every seam is closely examined.



• The wire is examined with a spectograph.

Paper mills continue to use *Lindsay* wires because —

Lindsay is producing better wires to meet the greater operating demands placed upon them.

Lindsay is meeting the need for competent technical service and speedier deliveries.

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Have you written for a copy of the *Lindsay* brochure, "Fourdrinier Wires In and For the Paper Industry"?

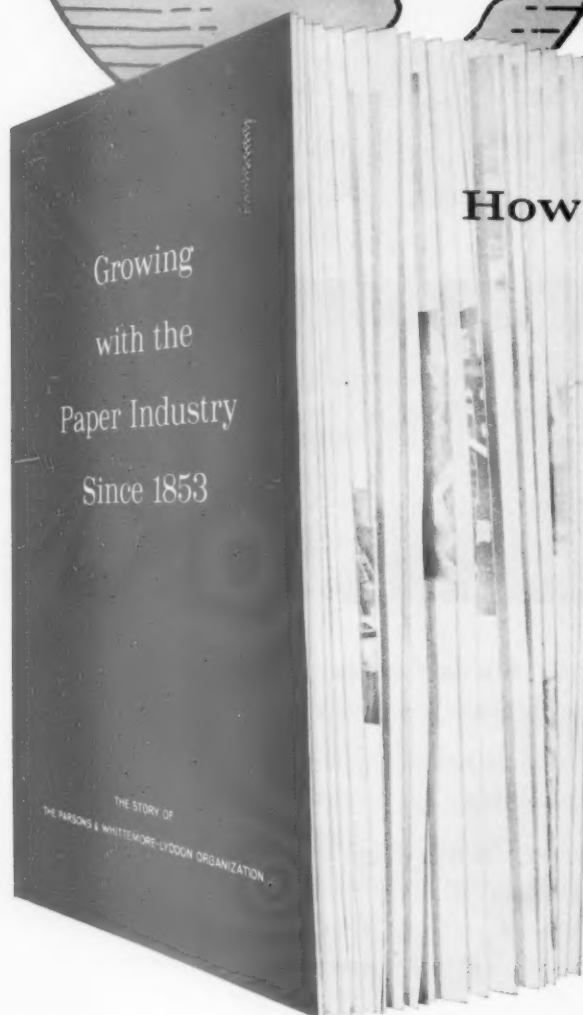
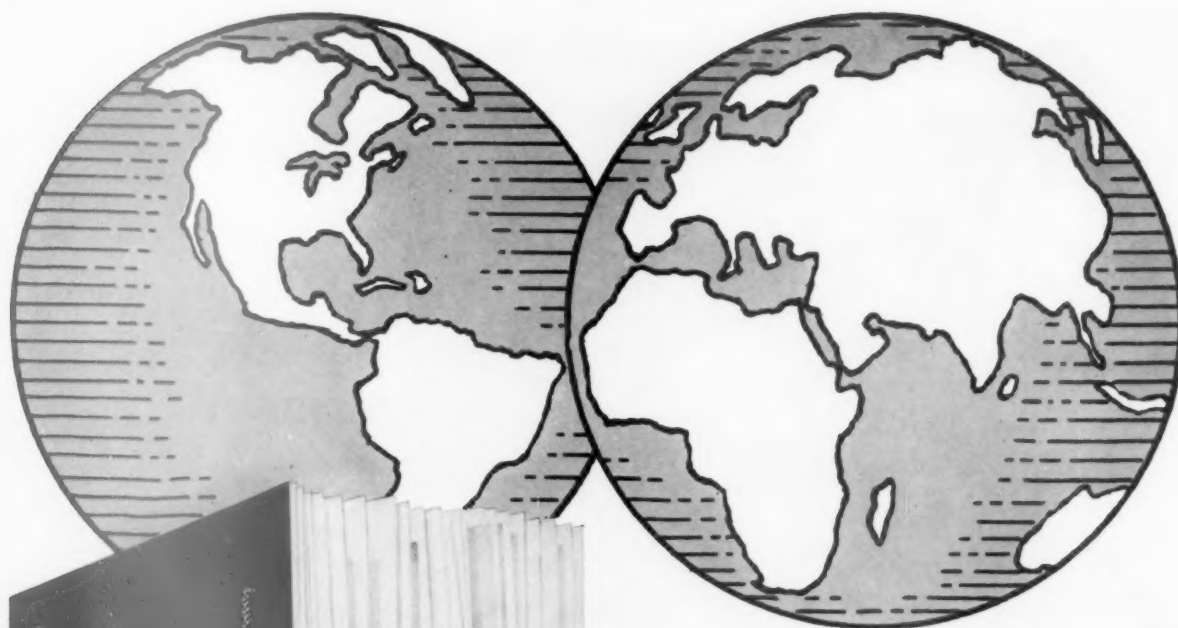
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How Parsons & Whittemore develops Pulp and Paper Mill projects around the world

Business executives, industrialists and government officials often request information concerning the facilities and services of the Parsons & Whittemore/Lyddon Organization.

To meet requests for such data, we have published a new, 40-page brochure which outlines the world-wide technical, financial, engineering and machinery-manufacturing facilities of the Organization. The booklet, which should prove especially valuable to those seeking to establish a paper industry in newly-developing countries, describes 25 pulp and paper mill projects recently completed or in course of completion, on four continents, using twelve different raw materials.

We shall be pleased to send you a free copy of "Growing with the Paper Industry Since 1853." Address your request to any of our offices listed below.

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Because of its truly nonionic nature, Igepal CO-630 does not form insoluble precipitates with calcium and magnesium, as does soap, or anionic based detergents. This nonionic detergent is compatible with alkaline salts, acids and commonly used solvents, but contains no harmful alkalis to weaken felt.

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Lightest in color...best stability! Test for yourself the properties of ALWAX* and WAXINE* sizes, the products of Cyanamid, America's oldest—and largest—producers of **Wax Sizes**. See for yourself that they offer the lightest color available anywhere...and the best stability. Other advantages—? Plenty! The most complete line...to assure you of the exact **Wax Size** for your particular need. Compatibility with other paper-making chemicals. Properties that produce

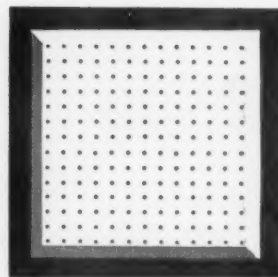
paper with lower water absorption, smoother surface, less curl, greater ink resistance, improved lactic-acid resistance. Cyanamid **Wax Sizes** can be used with rosin sizes to increase sizing efficiency, lessen the quantities needed, and create major production savings. Call your Cyanamid salesman for complete technical information to help you select the right **Wax Size** from the widest, lightest line of sizes available today.



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COMPLETE MILL INSTRUMENTATION,



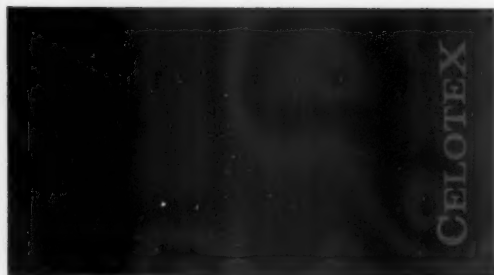
Honeywell



First in Control

SINCE 1885

HONEYWELL STYLE



■ At the new L'Anse plant in Upper Michigan, The CELOTEX Corporation produces a variety of acoustical and decorative fiberboard ceiling tile, insulating sheathing, insulating roof deck, and roof insulation. The plant is designed to turn out more than a half-million square feet of half-inch fiberboard daily.

■ The L'Anse fourdrinier machine shown here is the widest wet-process structural board forming machine in the world. The graphic panel in the background controls the entire board machine operation.

■ This graphic panel and other instrumentation, made, installed, and serviced by Honeywell for the L'Anse plant, help make this operation "the only one of its kind in which a fiberboard product travels all the way from manufacturing and fabrication . . . to inspection and packaging on a continuous production line."

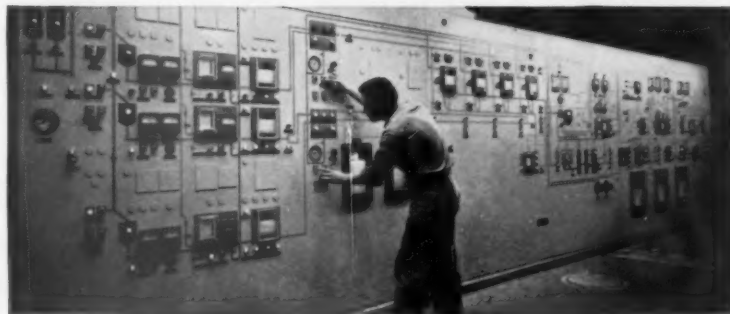
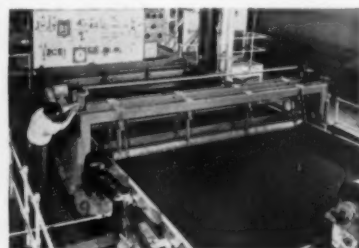
SYSTEM DESIGN: Giffels & Rossetti, Inc.
Engineers • Architects, Detroit, Mich.

For the world's most automated fiberboard mill, CELOTEX specified complete mill instrumentation, Honeywell style—*pre-piped, pre-wired, installed, and serviced.*

CELOTEX solved with one Honeywell contract the 1001 special instrumentation problems involved in getting the company's new L'Anse plant into production: instrumentation analysis of the fiberboard manufacturing process; supplying the complete control system; installing the control instrumentation with complete pneumatic piping and wiring; testing and calibrating the system; training CELOTEX personnel to operate and service the system; and providing complete guaranteed servicing for one year after completion of installation. *All in one complete package!*

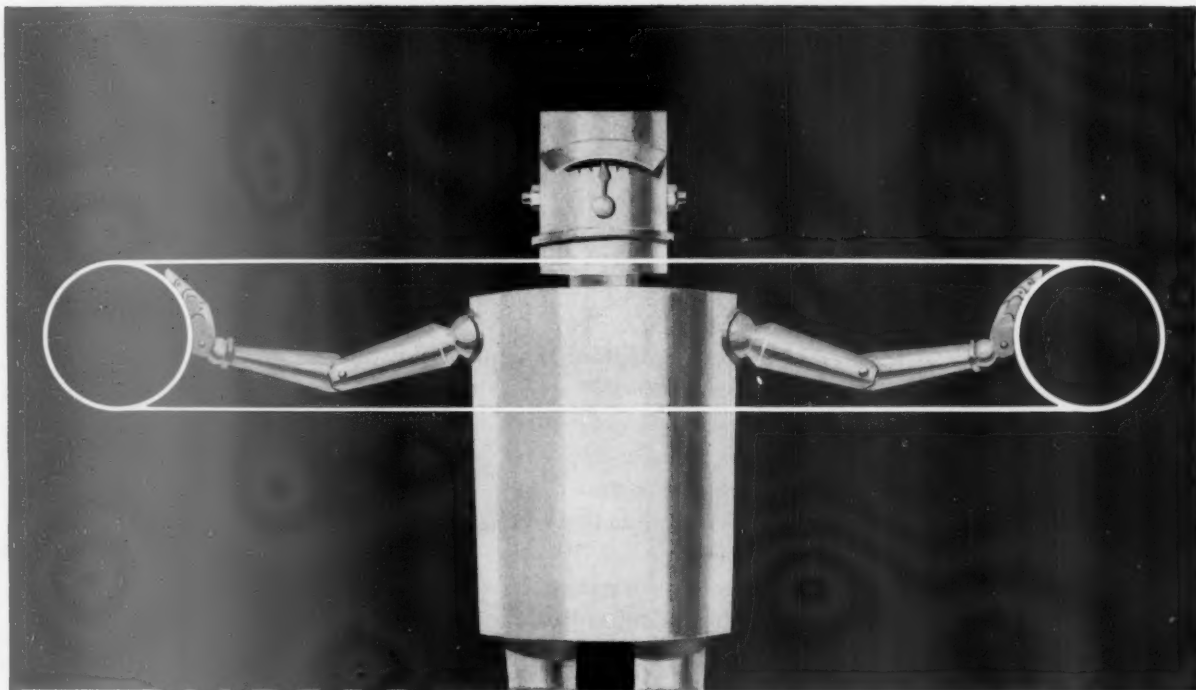
Honeywell's *Pneumatic and ElectriK Tel-O-Set* recorders, transmitters, controllers, and other miniature instruments bring significant savings to this application. They not only save money and panel space but also permit consolidation of instruments into a more compact, easier-to-read graphic panel. All the instruments used in the pulping operation, for example, are grouped on a single panel rather than two or three which would be required if full size instruments were installed. By using both pneumatic and electric instruments in the control system, CELOTEX is able to utilize the inherent advantages of both types.

Find out more about *Complete Mill Instrumentation, Honeywell Style!* Get in touch with your local Honeywell field engineer. Be sure to ask him about the cost- and space-saving advantages of *Pneumatic and ElectriK Tel-O-Set* instruments. MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa. — In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.



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... lengthens wire life through automatic control

The newest Inglis contribution to better paper making takes the business of wire tension adjustment out of human hands—maintains the appropriate uniform tension automatically. The device lengthens wire life by compensating automatically for natural stretch, and by positively eliminating the danger of damage from overtension in a wire cooling after hot stock is removed. When required, easy manual changes can be made, allowing the paper maker to use his judgment in selecting the best tension for different wires. Tension settings may be recorded for later reference.

From head box to winder, paper machinery by Inglis is designed and built to keep the modern paper maker in step with modern production demands.

For full details of the Inglis Wire Tension Device, write for publication P.P. 604.

PAPER MAKING MACHINERY

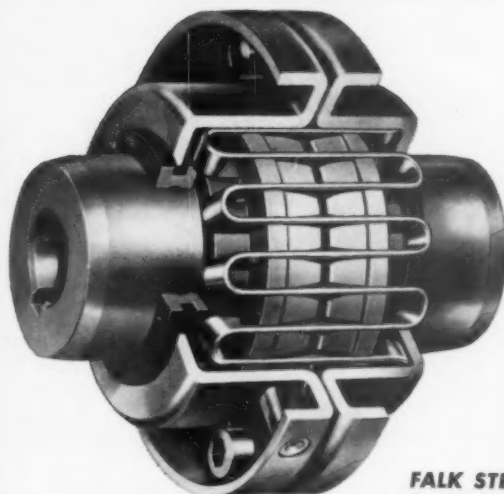
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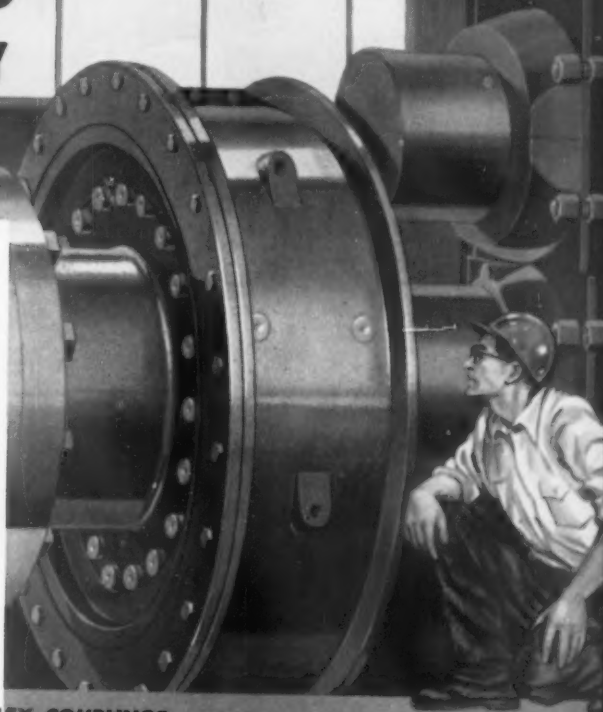
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Giant Falk Coupling smooths out steel blooming mill performance

On a blooming mill at the Copperweld Steel Company plant in Warren, Ohio, installation of a large Falk Steelflex coupling between motor and pinion stand eliminated troublesome noise and vibration which threatened to damage mill machinery. Transmitting 5,000 hp at 50/100 rpm, this is not the largest Falk coupling... others are designed to transmit up to 130,000 hp at 100 rpm.

This installation and others like it prove the Falk concept of shaft coupling design—namely, a modern shaft coupling must contribute to the successful performance of the machinery system.

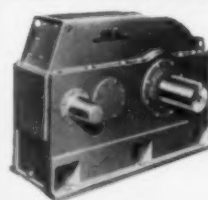
What does this mean to you? Just this: On large machines as well as small, the exclusive Falk grid-groove design does make a difference, and the difference is torsional resiliency with the strength of steel...reason enough to specify Falk Steelflex couplings as "long life" insurance for your connected machinery.

Falk Steelflex couplings are available in standard designs in 34 sizes for applications from .3 hp at 100 rpm to 130,000 hp at 100 rpm, with excellent delivery. Write for Bulletin 4100.

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MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS
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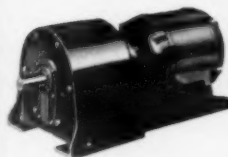
A Point to Ponder... When you need gear drives or shaft couplings of "FALK OR EQUAL" quality, where but from Falk can you get the "OR EQUAL"?

Other members of America's First Family
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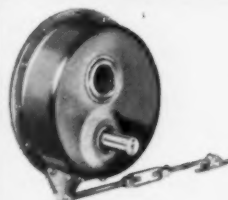
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*Idea submitted by William T. Hawkins, Jr., S.D. Warren Co., Muskegon, Mich.
Photo of Columbia River from "Crown Point," near Portland, Oregon.



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**"Reminds me of the steady flow
of water through
HAMILTON Felts!"**

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Hamilton
FELTS

***WIN . . . A NEW Shakespeare
Spincast Fishing Outfit!**

"What famous place reminds you of Hamilton Felts? Tell us why in a few words; sign your name and address and name of company. Each idea from a U.S. papermaker that we use wins a new 1961 model Shakespeare Spincast Rod and Reel—FREE! When identical winning ideas are submitted by 2 or more papermakers, the one with the earliest postmark will be considered the winner. Every U.S. papermaker entrant receives a famous Rex Spoon fishing lure — FREE. Send me your suggestion — today.
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"If one of our 300 modern, technically proven styles won't solve *your* needs, we'll be happy to design a Hamilton Felt that will. Just ask your Hamilton Felts Service Salesman."

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Delivered in 34 weeks

BLACK-CLAWSON'S 724th PAPER MACHINE IN OPERATION AT FIBREBOARD

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These facilities and abilities can perform equally well for you, on a single component, rebuilding program or a complete paper machine. Try us!

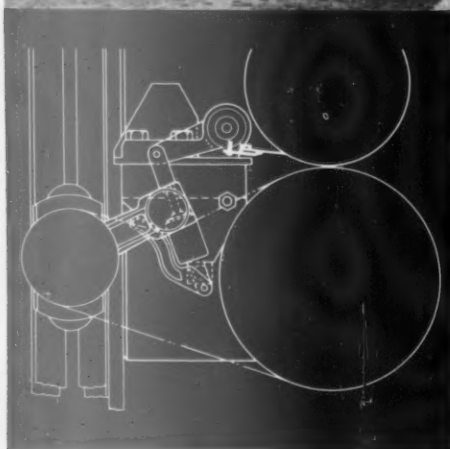
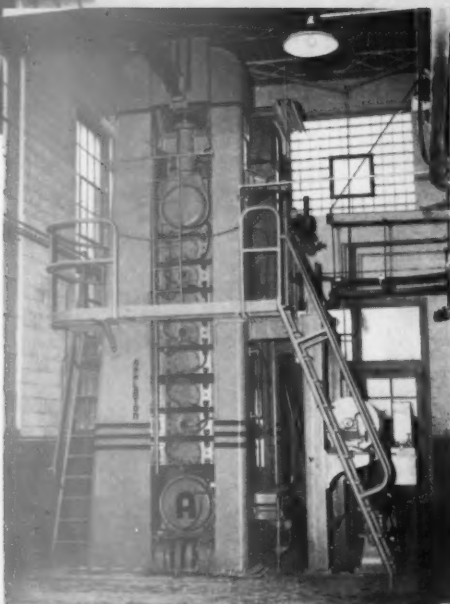
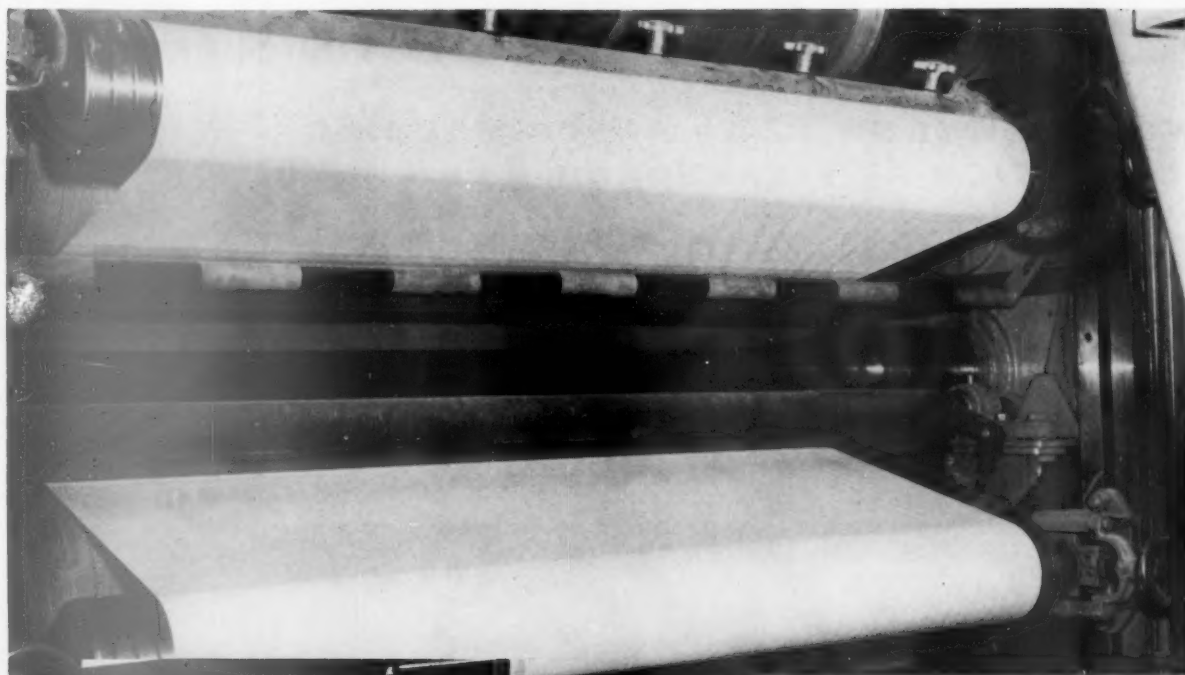


**FIBREBOARD PAPER
PRODUCTS CORPORATION**



PAPER MACHINE DIVISION
Watertown, New York
**ANOTHER ADVANCED
ENGINEERING DESIGN**

BLACK-CLAWSON



Doctoring is the business of specialists

AS DOCTORING SPECIALISTS, Lodding is constantly joining forces with progressive machine builders to achieve excellence in doctor performance for papermakers everywhere.

It was through just such a combination of engineering and manufacturing skills that the first successful installation of doctors was made on a supercalender running inked, waxing stock. It took place in 1948 at the Badger Paper Mills.

Ever since, these same Lodding Doctors, custom designed for the Appleton Machine Company, have had a notable record of performance keeping the rolls clean and shiny. The supercalender was engineered to apply 2000 lbs. per lineal inch nip pressure at the bottom nip, while operating at speeds up to 1600 fpm.

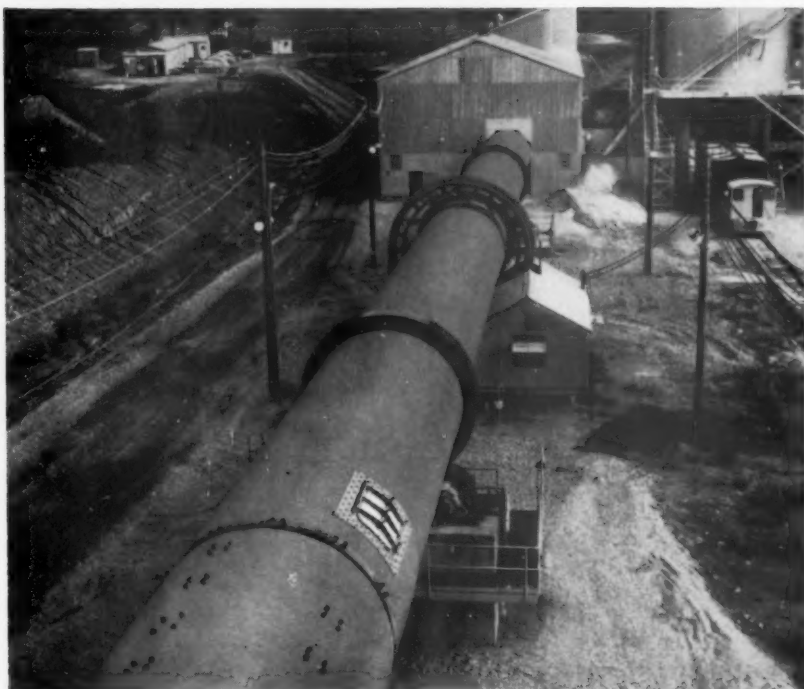
They were among the first doctors to be equipped with multiple station hydraulic oscillation. Now, with wider and faster machines, the importance of calling on specialists to solve doctoring problems increases. Lodding is always ready to accept any doctoring assignment, no matter how difficult, in cooperation with the machine builder or directly with the papermaker.

When you want excellence in doctor performance, specify Lodding.

LODDING
Engineering Corporation
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Rotary Kilns



**For
Reburning
Lime
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We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge and for many other purposes.

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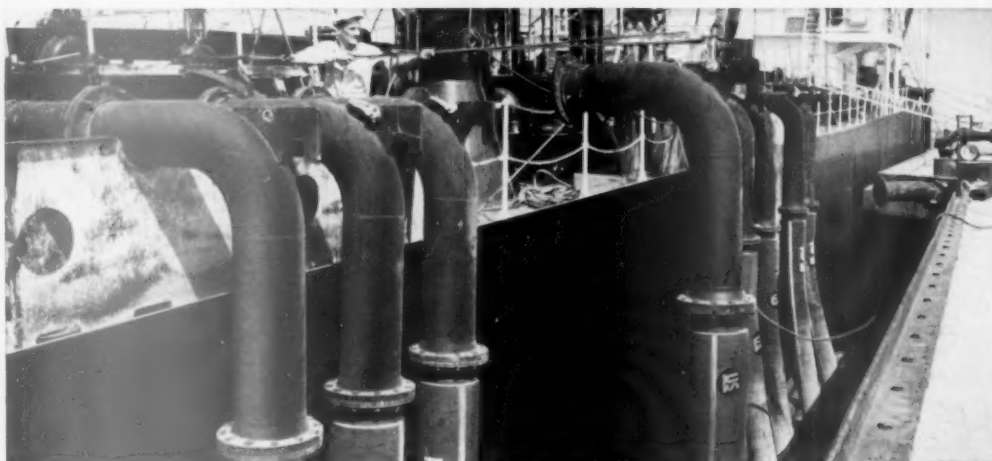
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AT THE HEART OF INDUSTRY...



"Monsters of the deep" are these huge U.S. Amazon® Pulp Hoses unloading liquefied wood pulp at Crown Zellerbach's Antioch, California, mill. Constantly half submerged, with the other half exposed to the attacks of weather, the bumps and grinds against ship and dock, and the need for repeated coupling and uncoupling, these 60' x 12" i.d. giants flex unharmed through a 25 foot rise and fall of the ship during unloading operations.

H 136

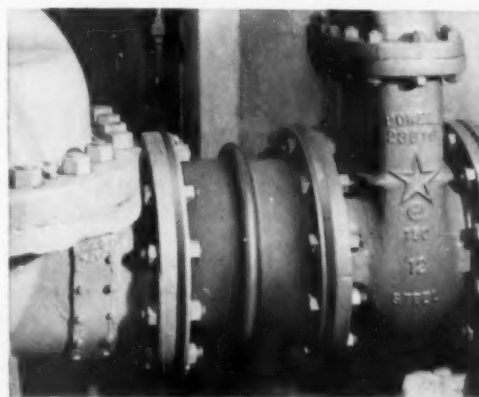


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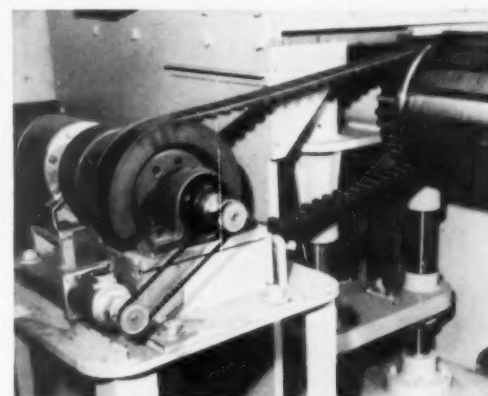
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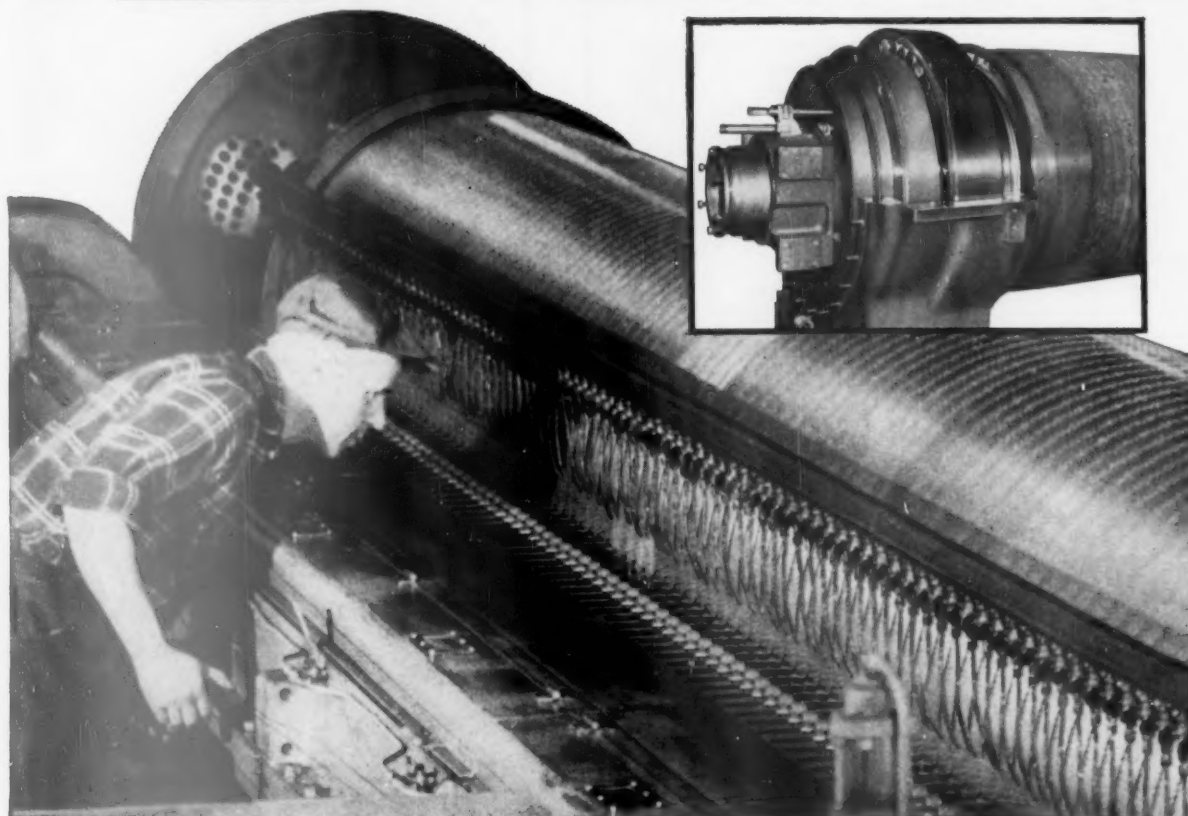
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Track-resistant, flame-retardant insulation	Yes	No	No
Contactor construction	Double Break	Single Break	Single Break
Overload relays visible from outside	Yes	No	No

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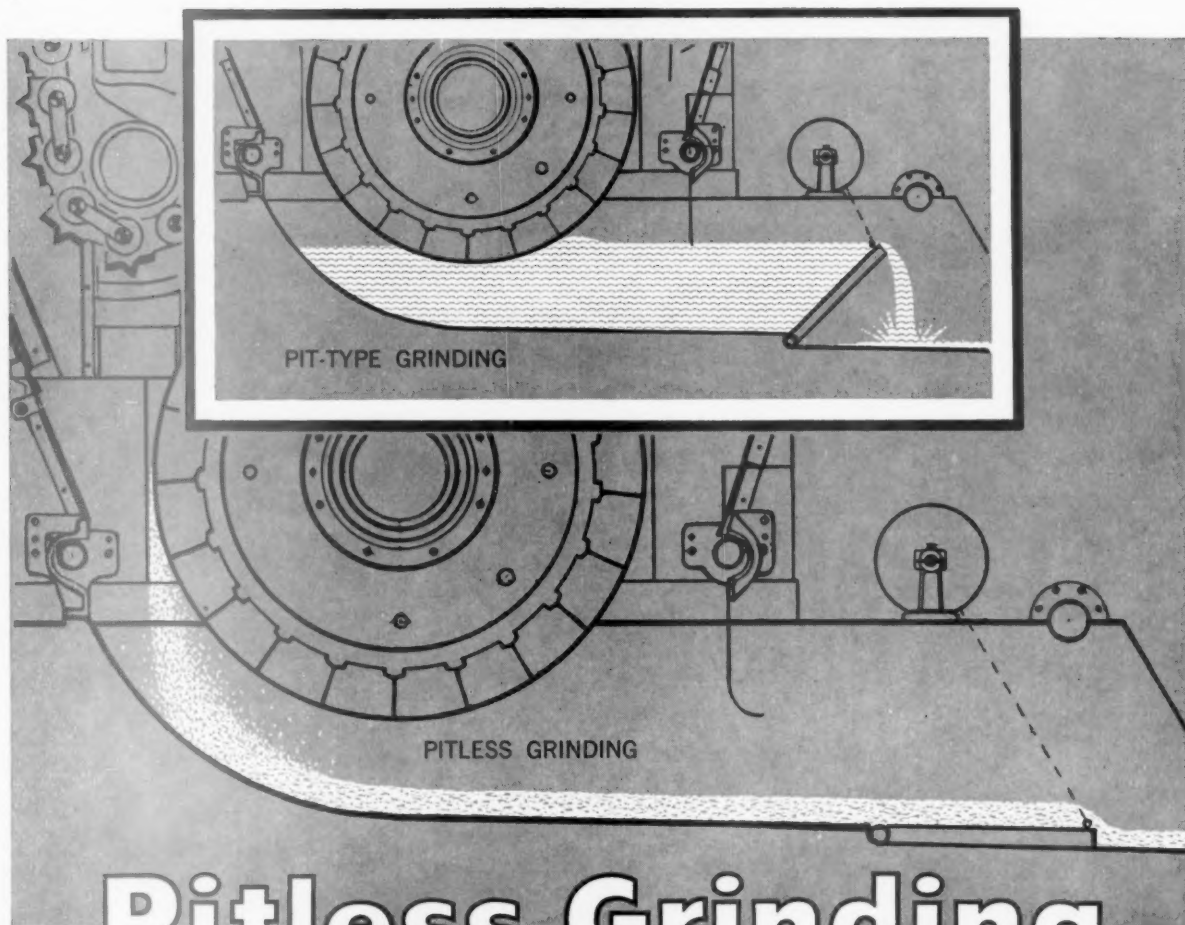
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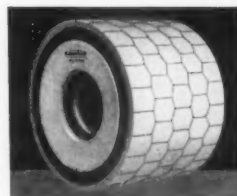
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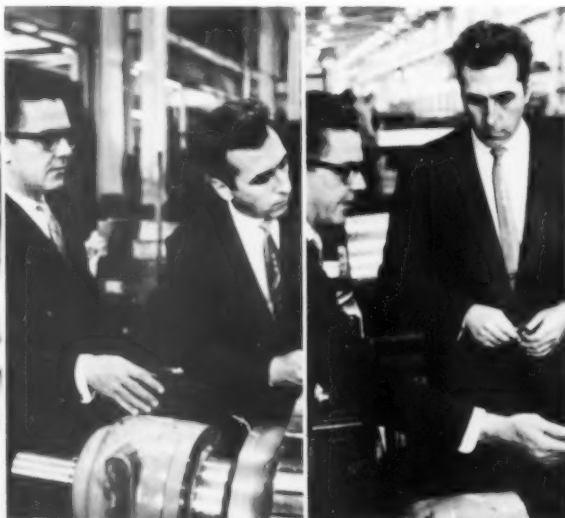
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PRECISION OF MANUFACTURED PRODUCT gets expert attention from John Okas, manager of manufacturing service (left, below), and sales representative Carson Cash. Winder drum of "flying splicer" (continuous unwind) is here being checked out on electronic balancing machine.



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Engineering Leaders Evaluate Progress

THE "DOLLARS-AND-CENTS" importance of the engineers and their engineering activities to this industry was dramatically emphasized in the 1961 TAPPI Engineering Conference in Washington, D.C. Highlights of this conference were reported in the last issue of PULP & PAPER.

Again, in this issue—as in past years—the chairmen or leaders of the conference constructively appraise and criticize the sessions over which they presided in these reports written especially for PULP & PAPER readers.

These comments are written with knowledge of the technical investigations and many weeks and months of work which were the background for the Washington papers and reports.

The best available man for each field—each session—writes his evaluation for our readers.

PULP & PAPER is very proud to present their comments. It should be added that, under leadership of Engineering Division Chairman M. J. Os-

borne, the dominating thought behind these reports was—and is—to reach "economic solutions through engineering." These engineers were agreed this was doubly important after a slump year in the industry.

All of these reports are by chairmen of sessions. Vice Chairman R. S. Welch took over for the maintenance committee chairman, H. M. Reed, Jr., of International Paper Co., who was able to attend only part of the conference.

For PULP & PAPER readers, three are making their last of these annual reports as chairmen. D. D. Hall of Howard Smith Paper Mills has succeeded Burt Kendall as chairman of the industrial engineering and materials handling committee. H. B. Harris, Jr., Union Bag-Camp Paper Corp., has succeeded Ed Hopper as corrosion committee chairman. C. L. Wills, Halifax Paper Co., has succeeded H. R. Emery as chairman of the steam and power group.

FLUID MECHANICS

Progress is being made toward design of equipment on mathematical principles

By P. E. WRIST, Chairman, Fluid Mechanics Committee, TAPPI
(Especially written for PULP & PAPER)

THE FLUID MECHANICS COMMITTEE presented two sessions containing nine papers of a high technical standard. The subjects included centrifugal cleaner design principles, headbox distribution systems, stock "jump" on high speed machines, and various aspects of drainage and retention theories. The contributors were

evenly divided from industry and academic institutions, which is indicative of the growing effort being undertaken in this field by paper companies.

In spite of the very many complications involved in papermaking systems, it was an encouraging sign that, in some areas at least, it is now

possible to predict and design equipment with a reasonable level of confidence in its eventual operation. As the several studies reported upon continue, this trend should become more definite.

The formation process was dealt with by three papers, which

ENGINEERS . . . progress being made in machine design

were complementary to one another. The first, "The Initial Retention of Fibers by Wire Grids" by Dr. R. B. Estridge, Albemarle Paper Manufacturing Co., discussed factors which influence the retention of fibers in dilute suspension as the slurry is passed through grids of varying dimensions.

Random orientation of fibers in the slurry was assumed, and Dr. Estridge considered several modes of behavior of fibers as they contacted the wire grids. Using probability theory, he calculated the percentage of fibers retained in the initial stages of filtration. His theory was tested experimentally, using synthetic fiber suspensions, and excellent agreement found. Dr. Estridge also showed that published results on retention of pulp fibers by a classifier screen also fitted his theory, suggesting its adaptability for practical cases.

The second paper, "Drainage in a Suction Former" by S. T. Han of The Institute of Paper Chemistry, described a series of drainage and retention studies with an experimental vacuum roll former. This paper was of value, in that it showed that useful operating predictions and machine designs could be achieved for production-type equipment, based on parameters developed in the laboratory. Another valuable contribution was the demonstration that the observed fiber retention rates could be derived from Dr. Estridge's relationships, together with two very reasonable assumptions.

The third paper, "A Filtration Theory for Compressible Fibrous Beds Formed from Dilute Suspensions" by H. Meyer of The Mead Corp., critically reviewed present theories of flow through fibrous mats. The concept of the fiber mat as a bundle of capillaries was discarded in favor of a viscous drag theory. A mathematical development of the two basic differential equations, describing flow through compressible fiber mats, was then presented. These equations unfortunately are neither simple nor readily soluble in the general case, and Mr. Meyer then discussed several special solutions of interest and compared his theoretical predictions with experimental results. They showed good agreement.

It would be premature to claim that these three papers have transformed paper machine design to a mathematical exercise. They have, however, collectively demonstrated that progress along these lines is being made rapidly.

PETER E. WRIST . . .

Associate research director for The Mead Corp., at Chillicothe, O., headquarters, a position he has held two years. Earlier he was research physicist and manager of paper manufacturing research for Mead. Born in Yorkshire, England, he graduated from Cambridge University in that country. He moved to Canada where he was research physicist for Quebec North Shore Paper Co., Baie Comeau, Que.



Studies of pore size distribution and of flow of water and air through paper sheets was discussed in a paper by Professor White and Mr. Marceau of Villanova University, "The Capillary Behavior of Paper." They started out with the intention of comparing the capillary tension and permeability methods of studying pore size distribution. Capillary tension was found to be a sensitive, discriminating technique for the absorbent papers tested. The flow of air through moist paper, however, exhibited unexpected results, the significance of which is not yet clear.

Professor Daily of M.I.T. presented a further progress report on the TAPPI-sponsored study of the flow behavior of fiber suspensions. This project has produced a broad understanding of the interactions of fibers with one another and with the water itself at consistencies spanning the range of normal headbox conditions. The need was demonstrated, however, in a previous report to distinguish between those effects due to the fiber's solid nature, its shape and its flexibility. The present report was concerned with the first of these—the effect of solid particles on fluid motion. Neutrally buoyant spheres were chosen as the solid phase to simplify the interpretation of the results. The results extended our understanding of the way solid material in suspension affects turbulence in a liquid. It was very obvious, however, that the special behavior of fiber suspensions results primarily from the fiber shape and flexibility. These two factors will be studied in the next phase of the work.

The second session began with two papers based on the second TAPPI-sponsored project—that concerned with flow instability, at the University of Michigan. Professor Yih presented a very lucid explanation of a mathematical theory describing the growth of flow instability in a film of

liquid on the surface of a rotating cylinder.

Dr. Debler presented a complementary report describing studies of the spouting phenomenon which occurs over table rolls on Fourdrinier machines at high speed. This project has been directed toward a quantitative explanation of this very spectacular phenomenon, which is often a serious limitation to the operating speeds of modern paper machines. Two growth zones have been identified. The first, occurring over the roll itself, has now been explained very satisfactorily. The second and more spectacular one, which occurs beyond the table roll, is now yielding to mathematical analysis.

Mr. Boadway, Consolidated Paper Corp., Canada, spoke on "Theoretical Considerations of Vortex Separators." Although this paper arose from his association with the development of a well-known type of cleaner, Mr. Boadway's paper was concerned with the development of design parameters applicable to vortex cleaner developments in general. His discussion of dirt removal efficiency, rejection rate control, dissolved gas separation, and economics of separator design can undoubtedly be applied to other designs than his own.

The final paper, by J. Mardon, D. Manson and J. Wilder of Oxford Paper Co., was concerned with the problems of manifold design for use with headboxes. Several existing designs were reviewed and commented upon from a hydrodynamic viewpoint. A cine film of one type of inlet demonstrated the way in which air might separate in the flow channel and lead to pulsating flow in the box. The paper concluded with an attempt to predict the flow behavior of a particular manifold design. Your reporter was left with the impression that there is much yet to be done before the design of manifolds can be classed as a precise science. Nevertheless, progress is being made in this complex problem.

PROCESS INSTRUMENTATION

"Everybody is talking computers"— Half a dozen firms plan mill usage

By EARL W. PRINCE, Chairman, Process Instrumentation Committee, TAPPI
(Especially written for PULP & PAPER)

IN SPITE OF COMPETITION from the mechanical engineering and fluid mechanics sessions which were held at the same hours, our attendance of approximately 140 was satisfactory. The program consisted of three papers: (1) Interim Report on Project 692 (Organization and Importance of the Paper Mill Instrument Department), (2) Controlling the Variables (W. A. Wrase, S. D. Warren Co.), and (3) Development of an Automatic Freeness Tester (D. G. Sutherland, Black-Clawson Co.) and a Data Handling Systems Panel, moderated by A. W. Plummer and with D. L. McGurk, Thomson Ramo-Wooldridge Computers, Dr. Charles Carroll, IBM, Wm. Brickner, Mead Corp., and Dwain Bates, Potlatch Forest Products Co., as panel members.

Interim Report on Project 692 was given by the writer. The object of this report is to present to the industry a criterion on which to base the organization of a new instrument department or to reorganize an existing one. The mechanics of the project were outlined. A comprehensive questionnaire was mailed to all TAPPI corporate members in order to obtain pertinent information concerning the various mills instrument departments.

We feel that a properly organized instrument department is a vital part of any mill in view of the tremendous increase in instrumentation and automatic controls. Certainly one of the paths to increased production, uniformity of product and raw material savings is through a properly applied instrumentation program. The paper on "Controlling the Variables" certainly bears this out.

Sooner or later many mills will have to employ more and more instrumentation in order to "keep in the swim." They will find their job very difficult without an efficient, well organized instrument department responsible for proper application and maintenance. Most of the larger companies have adequate instrument departments and all new mills are designed with instrumentation in mind.

"Controlling the Variables," by Mr. Wrase, concerned stock pro-

portioning using the magnetic flow meter. This was an excellent paper, well written and well delivered. The system consists of many magnetic flow meters in the pulp and additive lines which makes the process virtually automatic. Hand measuring and batching was eliminated, and due to this the production work force was reduced by 20 men. One instrument technician was added, making a total reduction of 19 men. In addition, according to Mr. Wrase, substantial savings in raw material were effected along with improvement in uniformity of product. This again is actual proof of the benefits of properly applied instrumentation—a better product at less cost.

Automatic stock proportioning has been in use at quite a few mills for some time. Some mills use the automatic batching system in which the stock and additives are accurately measured and dumped into a large chest by merely pushing buttons. Others use the continuous mechanical system and in the past several years the magnetic flow meter has been available. All three systems have been proven successful in their respective plants and the choice of one over the other probably is due to many factors. Type of product, number of additives, space available, initial cost and operating personnel are some of the factors.

"Development of an Automatic Freeness Tester" by Mr. Sutherland was also an excellent paper. This device was developed in cooperation with The Mead Corp. and much of the initial work was done by Cloyd Richardson of Mead.



Freeness is another of those variables which if properly controlled, will contribute much to uniformity.

Without getting into the design of the unit, suffice it to say that freeness is measured and any deviation from preset limits causes an adjustment to the Jordan plug to correct the deviation. This unit is in operation and according to reports, doing a good job.

Considerable research in this field has been going on for the past several years in some of the larger mills. The approach to the solution of the problem has been similar and the equipment available differs somewhat in the construction of the miniature "decker" necessary to produce a measurable drainage of the stock and in the method of measurement.

Everyone is talking "computer" these days but few realize the tremendous preliminary work needed to take advantage of these marvelous machines. Consequently, the Computer Panel was well received and quite timely.

A computer must be "fed" accurate data in order for it to do its job. Here again accurate instruments are needed to obtain the data which must be put into mathematical form in order to "program" the computer.

The moderator and panel members did a splendid job in explaining the why and how of the art. A description of such a computer which is in actual paper machine use was described. A tremendous amount of data is being logged and there is no doubt that such information will contribute greatly to improved performance by showing weak points in the process.

ENGINEERS . . . one effluent plant failure can undo much good

The next step, after weak points are corrected, would be to put the computer on control. However there are still variables existing which can not be recognized at this time. It is a complex situation and one which certainly proves that paper making is a science and not an "art" as it was called not

too many years ago.

It is understood that more than a half dozen paper mills are investigating computers for mill use. Due to the high cost of plunging into the game it would seem that only the larger companies can afford it at this time.

There are several companies who

now utilize computers to schedule orders, control inventory, etc., by predicting in advance the needs. This is done by using past data and various projections through market analysis.

There is no doubt that we as an industry are beginning to recognize the merits of advanced technology.

SANITARY ENGINEERING

Parade of progress in waste treatment; solutions must suit each mill situation

By WILLIAM A. MOGGIO, Chairman, Sanitary Engineering Committee, TAPPI

(Especially written for PULP & PAPER)

THE PROGRAM of the sanitary engineering committee consisted of six technical papers presented in two sessions before a large and enthusiastic audience.

Preceding the technical portion of the first session the group was addressed by Albert W. Wilson, editor of PULP & PAPER. As keynote speaker, he covered briefly a wide range of topics pertaining to the problems of the pulp and paper industry in the area of waste treatment, particularly as to what lies ahead.

Significantly, he pointed out that the industry has made many major contributions to the art and science of waste treatment and stream improvement and that it ranks high in positive accomplishments in these fields. This, however, is no reason for complacency since it can be anticipated that future requirements will be more stringent and require higher degrees of treatment.

The increased complexity of the problem faced will also require larger cash outlays for treatment facilities, more attention to in-plant water conservation and reuse, and the need for more highly trained specialists in this field.

The central theme of the technical sessions was "A Parade of Progress in Effluent Treatment." The six papers each dealt with the description of a full-scale effluent treatment plant, currently in operation and specifically designed for the purpose of treating mill effluents from the particular plant concerned. Each treatment plant involved secondary, or biological, treatment.

The following papers, numbered for reference, were presented:

1. "A Lagoon System for Treat-

WILLIAM A. MOGGIO . . .

Co-winner with J. M. Holderby of St. Regis of the 1961 Industrial Wastes Award for outstanding contributions to the technology of water pollution control. Now researcher for Armstrong Cork Co., he has been by-product manager of the Rhineland, Wis., Yeast Plant and specialist on wastes for East Texas Pulp and for the National Council of Stream Improvement. He earned b.s. and m.s. degrees at Rutgers.



ment of Bleach Plant Effluent," by C. S. Huestis, Continental Can Co.

2. "New Bio-Treatment Design and Performance—Pulp and Paper Waste," by Roy F. Weston, Roy F. Weston, Inc., and W. D. Rice, P. H. Glatfelter Co.

3. "An Improved Potomac River—A Case History of a Major Waste Treatment Program," by G. M. Griffith, West Virginia Pulp and Paper Co.

4. "Secondary Waste Treatment at a Specialty Paper Mill," by C. F. Ackerman, Union Mills Paper Manufacturing Co.

5. "Accelerated BOD Removal of Paperboard Wastes," by L. L. Klinger, Whippany Paper Board Co.

6. "Plastic Trickling Filters—Design and Operation," by V. A. Minch and J. T. Egan, The Mead Corp., and McD. Sandlin, Rome Kraft Co.

The first paper dealt with oxidation lagoons, the second with a modified activated sludge treatment installation, the third and fifth papers with standard activated sludge and the fourth and sixth papers with trickling filters, the former with a standard type installation and the latter with a high rate modification of the trickling filter principle.

One paper included a complete summary of the laboratory and pilot plant investigative work leading to the choice of the most suitable method for waste treatment at this installation. Fortunately, the latter presentation was preprinted and available. This written presentation, which is very well documented with facts, figures, and bibliography, is a worthy companion to the oral presentation. This remark is not meant to detract from the worthiness and contributions of the other presentations; however, it would have been most desirable to have had all the oral presentations preprinted since it would have rendered them most meaningful.

One highlight of the program was the contrast offered by two of the waste treatment installations described. Both were concerned with trickling filters. In one instance a standard trickling filter, 70 ft. in diameter (6 ft. media depth) is providing 80-90% BOD reduction for a waste flow of averaging 1.3 MGD. Contrasted to this, an 80-ft. diameter modified trickling filter (20 ft. media depth) is providing 45-60% BOD reduction for a waste flow of between

25-30 MGD.

Prior to the development of the modified trickling filter, this type of treatment was considered not applicable for large flows of pulp and paper mill effluents because of problems of media plugging, low BOD loadings, large land areas required, high construction costs and resistance to air flow through filter media.

Modification of the conventional trickling filter, chiefly the use of preformed plastic media in place of stone, has now overcome most of the inherent disadvantages of this type of treatment. This modification, coupled with some of the inherent advantages of trickling filters over other treatment methods, such as low operating costs, low maintenance costs, resistance to upset by shock loads, and the possibility of high temperature operation utilizing thermophilic organisms, bids well to make modified trickling filter treatment of pulp and paper mill effluents a very attractive and more economical solution to some knotty problems.

Situations and solutions were described in four of the presentations (Papers 1, 2, 3, and 6).

The problem common to each situation was the treatment and disposal of large effluent flows. In two instances the receiving streams were large rivers with flows normally considered high enough to handle the untreated effluents. However, because of special requirements downstream from each plant discharge, it was necessary to resort to a high degree of BOD reduction of the effluents.

In the other two instances, because the receiving waters were very small streams it was necessary to provide very high degree of BOD reduction of the effluents. The end, in each case, was achieved through a biological treatment method. The means to the end, however, was achieved through four different methods, involving respectively oxidation lagoons, modified activated sludge, standard activated

sludge, and modified trickling filter treatment processes.

In each instance the process used was selected because it was the most economical solution which best suited the particular requirement and conditions existing. These presentations certainly point up the oft-stated admonition that there is no panacea for effluent treatment and that each case must be considered on its own merits.

Pertinent and valuable comments were made by participants throughout both sessions, either directly or implied from their presentations. Many are worth repetition in this review. On the matter of "economic solutions through engineering" (16th Engineering Conference theme), it was brought out that the lowest initial capital investment in a waste treatment plant may not be the most economical solution to an existing problem.

The solution must be considered in light of many other factors. Among the more obvious considerations are operating costs involving chemicals, power requirements, maintenance of equipment and operating and supervisory personnel requirements; less obvious perhaps is the consideration that must be given to the adaptability of the treatment process selected and the facility constructed to various changes which should be anticipated.

These changes include in-plant changes brought about by future increased production or manufacturing process changes or modifications resulting in effluents with characteristics differing from those of the moment. Other changes which might be anticipated include changes in downstream water uses of the receiving waters, such as new industrial plants, municipal water plants or new agricultural, recreational, water conservations or power generation uses brought about through downstream construction of dams.

Impoundment of downstream waters can result in serious changes affecting the natural purification ca-

capacity of receiving waters. Even upstream water impoundments by power or water conservation dams can bring about serious changes in natural purification capacity of receiving waters through decreases in the dissolved oxygen content of the underflow water or through changing river flow patterns downstream.

Consideration should also be given to the probability of upgraded treatment plant effluent quality requirements, such as color removal and the new specter visible on the horizon—"tertiary" treatment. Consideration should be given to the foregoing factors when the most economical effluent treatment process and facility is being considered.

Other pertinent points included an admonition to allow an adequate margin of safety in the design and construction of a treatment facility. For various reasons, including lack of basic design data, lack of historical operating experience and data, the complexity and incomplete knowledge of the treatment processes and the constantly changing character of the waste flows, this margin of safety requirement is a necessity.

Because of unanticipated or unforeseen circumstances or occurrences a treatment facility designed to just take care of a given situation may upon operation, yield sub-standard results. Sub-standard performance of a costly effluent treatment facility can be nearly as bad as no treatment facility at all.

Effluent treatment facilities should be constructed with built-in safeguards to prevent complete failure or sub-standard performance. Instrumentation and warning devices are important adjuncts because, in many instances, the treatment facilities are somewhat isolated from the manufacturing plant and center of activities. It must always be kept in mind that only one failure in performance can undo the goodwill accrued over many years of good performance.

DRYING

High velocity drying is "no panacea"; applications on coating need study

By FRED G. PERRY, JR., Chairman, Drying Committee, TAPPI
(Especially written for PULP & PAPER)

THE DRYING COMMITTEE sponsored a program in keeping with the conference theme, "Economic Solutions Through Engineering." These papers

ranged from a fundamental approach to the understanding of cylinder drying mechanisms to practical problems of high-velocity air drying for paper

coatings. All provided information of use in arriving at economic solutions to drying problems.

The paper entitled "Heat Transfer

ENGINEERS . . . high velocity air drying "useful"

and Water Removal in Cylinder Drying II—Felted Cylinders" by Professor A. H. Nissan, Rensselaer Polytechnic Institute, H. H. George, Jr., E. I. du Pont de Nemours and Co., Inc., and D. Hansen, Rensselaer Polytechnic Institute, was presented by Prof. Nissan.

With an exceedingly refreshing approach, Prof. Nissan developed heat transfer and mass transfer theory for felted cylinders and with appropriate simplifying assumptions, boiled the theory and mathematical equations down to terms easily understood by the audience. In this work, an extension of prior work on unfelted cylinder drying, the Rensselaer group used an experimental felted cylinder to obtain data which were matched with drying curves calculated from the theoretical equations. Sufficient agreement was found to indicate that a theoretical analysis can be applied with a high degree of confidence to any cylinder drying process. Further, where theoretical and experimental curves do differ under some boundary conditions, this technique indicated areas when more knowledge is required to modify the theory—thus, indicating areas for further research.

I believe the industry can count on a continuing effort by Dr. Nissan in relating theory to practice in the field of paper drying which will be of long-term significance.

High velocity air dryers were dealt with in the following papers and panel discussion: "Water Re-

FRED G. PERRY . . .

Group leader of the Research and Development Division for Arthur D. Little Inc., Boston. He has worked especially on drying methods for paper company clients. He graduated from M.I.T. in 1943 in chemical engineering and spent three years in Army Ordnance. He went back to M.I.T. for graduate work. He was born in Newton, Mass. He recently surveyed sulfite pulping for Little in 30 mills here and abroad and came to the conclusion that sulfite pulping is here to stay.



moval by High Velocity Air Hoods," J. A. Means, Time Inc., Springdale; "Determination of High Velocity Dryer Performance on a Paper Machine," J. A. Villalobos, J. O. Ross Engineering; panel discussion: "High Performance Hoods for Coating Drying," S. C. Holt, Consolidated Water Power & Paper, moderator; G. D. King, Crown Zellerbach, West Linn, G. W. Goetz Jr., Blandin Paper, R. Johnson Jr., Oxford Paper.

Perhaps the most significant contribution that these papers made was to emphasize how extremely difficult it is to generalize on the performance of high velocity air dryers. Performance is very much dependent upon a number of operating variables, other than specific air hood design. Examples of these variables are the type of sheet or coating being dried, conditions of the sheet such as moisture availability at the surface, location of the hood on the machine, factors connected with

performance of the associated cylinder dryers, conditions of air in the air hood, ability of operators and technical group to operate and control the machines, and so on.

Operating troubles were frankly discussed, and these ranged from unsuccessful operation of air dryers through experiencing paper surface defects under some conditions to trouble-free, high-speed coated paper drying operations.

The papers brought home the fact that high velocity air drying is not a panacea but rather has useful application under some conditions, and most important, much more attention must be given to "applications research," or to determination of the effect of the many variables on paper drying so that proper applications for high velocity air drying may be more intelligently selected, and the performance of these dryers more accurately predicted.

OPERATIONS RESEARCH

New programming technique is unveiled; values in simulation models described

By **DR. EDWARD F. THODE**, Chairman, Operations Research Committee, TAPPI
(Especially written for PULP & PAPER)

THE THIRD ENGINEERING CONFERENCE at which an operations research program was presented was also the first sponsored by the operations research committee since its change from subcommittee status in July. In addition to the session specifically devoted to operations research, the committee cooperated with the process instrumentation and chemical engineering committees in presenting the panel on computer control and data handling systems reported by Earl Prince.

Dr. Elieze Naddor, associate professor of industrial engineering at

Johns Hopkins University, discussed "Simulation Models in Operations Research," pointing out that techniques for describing random events or generating random inputs to a system must not be confused with *decision-making* techniques resulting from game theory. He pointed out that for many business simulations so large a number of cases (trials) must be run that the problem may become too uneconomical to solve. He expressed reservations about business games because of limitations of game theory and the consequent unrealistic con-

struction of many models used in this activity.

Dr. Ralph H. Caston of Kimberly-Clark Corp. then described the use of simulation techniques to evaluate inventory procedures on a certain grade of paper flat stock. He explained how order records were analyzed to provide information on relative distribution of orders—how many orders are received a day, how many cartons per order, how many for long grain and how many for short, and finally the specified delivery time. Dr. Caston showed how these figures were used

to simulate 1000 days of operation on a given inventory policy and how accurate figures for percentages and frequencies of delays in delivery could be predicted from that simulation. He commented that the simulation had proven very useful to the making department in showing that certain factors formerly believed important were not really critical, so that more flexible procedures could be adopted.

Dr. William Dorfman of C-E-I-R Inc. (Corporation for Economic and Industrial Research) gave a preliminary report on a technique for programming and allocating resources for multiple concurrent projects. This technique, which was being publicly discussed for the first time at the TAPPI Engineering Conference, is particularly designed to provide optimum assignment of men and equipment to concurrent construction projects.

DR. EDWARD F. THODE . . .

A doctor of science from Massachusetts Institute of Technology, he later was associated with the Pulp and Paper section of the University of Maine. Since joining The Institute of Paper Chemistry in Appleton, Wis., he has become its pulp and papermaking section chief.



While variations of the Critical Path Method (PERT, PET, LESS, etc.) have been rapidly developed for optimizing time and costs of a single project, the development of models for simultaneous conduct of different projects with different priorities and completion dates has not heretofore been attempted. The model presently

under development has handled three simultaneous projects involving 67 activities and some 40 resources. A computer program covering 117 time periods required 2½ minutes to run on the IBM 7090 and provided a better schedule than one produced by several man-weeks of tedious hand calculation, posting, and charting.

STEAM AND POWER

One large plant okay, says Jack Judge; Great Northern's central control cited

By H. R. EMERY, Chairman, Steam and Power Committee, TAPPI
(Especially written for PULP & PAPER)

THE MEETING OPENED with T. J. (Jack) Judge, assistant chief engineer and coordinator of power plants, Southern Kraft Division of International Paper Co., Mobile, Ala., giving a well rounded paper on the "Comparison of One Large Versus Two Small Turbine Generators for Paper Mill Power Plants," in which he discussed in detail the factors involved and concluded that the final decision is influenced largely by conditions, such as plant size, potential growth, operating preference and availability of capital funds for construction.

Mr. Judge jointed out that, in his opinion, the usual objection of having the whole plant shut down with trouble on a single turbine generator has been made invalid by the excellent operating experience of the several large single units which are in the field. He did not feel that over a period of several years more production could be obtained by the use of two units than by the use of one larger unit. The audience indicated interest in this paper during the discussion period. The paper had not been preprinted, but will be published in TAPPI magazine.

"Centralized Control of Steam and Electric Power in the Pulp and

H. ROSS EMERY . . .

St. Regis Paper Co.'s executive power engineer, Central Engineering Division, he is headquartered normally in Jacksonville. Educated at Tufts College, near Boston, he joined St. Regis as power supt. for the northern mills and was transferred to Jacksonville in 1955.



Paper Mills" was discussed by Kelsie L. Fish, Jr., power systems engineer for Great Northern Paper Co., Millinocket, Me. He gave a detailed description of the extensive hydroelectric and steam power system at Great Northern. He points out that this is an independent system, operating at 40 cycles, with the only purchased power being that for operating time clocks. Mr. Fish did not say in so many words during his speech, but it became obvious that the reason for purchased power on time clocks is that the 40 cycle system frequency is varied in order to control the load on one of the hydroelectric stations. There was interest shown in the audience on the centralized control fea-

tures described by Mr. Fish, and a remark was made by several that this system would lend itself very well to computer control.

Taking courage from last year's unscheduled presentation of Babcock & Wilcox's inter-action of smelt and water film, the steam and power committee again had an unscheduled event on their program. Paul L. Suter, power engineer of the Sartell, Minn., mill of St. Regis Paper Co., gave a five minute synopsis of his case-history type paper on "Hot Gas Conveying of Hog Fuel."

This paper gives an actual operating experience on taking hot gas from the boiler outlet and using it through a hot gas fan to pick up hogged fuel.

ENGINEERS . . . tension control important for reels

The hogged fuel is then conveyed through a second fan to two separating cyclones located on the top of the boiler. The gas is discharged from the cyclones along with steam from the fuel, and the fuel is introduced into both sides of the boilers through Detroit pneumatic spreaders.

The theme of this paper was to give a workable solution to the problem often experienced in Northern mills of burning a small quantity of very wet bark. While time did not allow questions at the end of Mr. Suter's speech, interest in the paper was shown by the immediate disappearance of one hundred copies that were available at the meeting. The steam and power

committee intends to make this information available by publishing the paper in TAPPI magazine as soon as possible.

The final event of the steam and power session was a panel discussion entitled "Projected Thinking on the Design of Paper Mill Power Plants" by four capable consultants' representatives. Moderator was Percy L. Nelson, associate, Chas. T. Main, Inc., Boston; panel members were George L. Yeakel, Gilbert Associates, Inc., Reading, Pa.; John G. Hoad, John G. Hoad & Associates, Ypsilanti, Mich.; and R. E. Baharian, M. W. Kellogg Co., New York. Each gave a short prepared address covering thoughts of his

company on future design of power plants, then answered questions. Subjects covered were of wide range, running from the cost of different types of construction materials, to new welding techniques, to the application of equipment developed in other industries to paper mill power plants. Summaries of these discussions will be made available to TAPPI members in TAPPI magazine.

The authors and participants in this program are to be congratulated on the fine job that was done. Interest was evident by the 120 or more in attendance at the meeting, and the large number who stayed until the very close of this session.

CHEMICAL ENGINEERING

Sound engineering can cut chemical costs in bleach plants and stripping towers

By JOHN LEWIS, Chairman, Chemical Engineering Committee, TAPPI
(Especially written for PULP & PAPER)

FOUR PAPERS were presented in the Chemical Engineering Session. In keeping with the conference theme of "Economic Solutions through Engineering," the papers presented ways of saving money in the pulp and paper mill through sound engineering.

Heat recovery is very common in Scandinavian pulp bleacheries, it was brought out in the paper "Heat Recovery in Bleacheries," prepared by Nils O. Alm, A.B. Separator, Lund, Sweden, and delivered by F. J. Lawry, DeLaval Co. Results of a survey made in 15 mills revealed that heat recovery systems in bleacheries show a range of savings of from 0.2 to 2.0 short tons fuel oil per hour, depending primarily upon total installed heat transfer surface area.

K. I. Mumme, Kimberly-Clark Corp., in his paper "Analog Computer Analysis of a Non-Linear Temperature Control System," related how an analog computer was used to simulate a system in which the water temperature in a storage tank was to be maintained by two identical parallel heat exchangers on the input to the tank. The system configuration and equipment limitations were such as to provide extremely non-linear system response. The importance of using simulation was emphasized as the only practical method of analyzing

JOHN LEWIS . . .

Of the Pulp & Paper Research Centre, Inc., Lawrence, Mass., where he is director of research, a position he has held two years. This center is sponsored by John F. Bolton & Sons, manufacturers of equipment. He formerly headed the Paper Technical Dept., Lowell Institute and is a graduate of the University of Maine in chemical engineering and paper technology.

ing this particular non-linear system. Process design changes have yet to be made in the mill system to comply with the conditions imposed and results predicted by the simulation. Therefore a final translation to mill practice has not been completed.

Sulfur dioxide and chlorine may be stripped from dilute waste gases by recovery in packed towers, it was learned from the paper "Absorption with Chemical Reaction from a Dilute Gas in Packed Towers," by C. W. Spalding, Hammermill Paper Co., and S. T. Han, of Institute of Paper Chemistry, which was delivered by Mr. Han. It was demonstrated that in a system consisting of a stream of caustic solution flowing counter-current to a stream of air containing

a low concentration of chlorine, the absorption rate of the reactive gas in the liquid increased with increase in pH above 11.5 until a maximum point was reached. This maximum is controlled by gas-phase resistance to absorption.

The height of the tower, and hence its capital cost for a given quantity of gas to be absorbed, is reduced while the cost of the absorbing medium is increased. It was postulated that there may exist a pH value where the total yearly cost of the stripping tower will be a minimum. Mr. Han provided specific information and words of caution concerning design procedure, indicating that minimum cost may exist with water as the absorbing medium unless caustic liquor is available at rela-



tively low cost.

The paper, "Stock Preparation Analysis" by John Lewis and Donald W. Danforth of the Pulp and Paper Research Centre, Inc., presented a

technique to be used in the paper mill for setting up refining conditions of power input and stock throughput to obtain optimum physical characteristics at a given freeness level. Proc-

essing of a minimum number of test samples, and hence minimum testing cost, is permitted by use of an experimental design chart which is adaptable to any refiner and raw stock.

ELECTRICAL ENGINEERING

Urges care in using control centers; open drip-proof motors successful

By SIGVALD ANDERSEN, Chairman, Electrical Engineering Committee, TAPPI
(Especially written for PULP & PAPER)

MOTOR CONTROL CENTERS should not be used indiscriminately indicated L. D. Mower, of Chas T. Main, Inc., in his paper "Proper Application of Motor Control Centers in Paper Mills." He pointed out that each installation should be evaluated on its own merit; that is, a comparison should be made between use of prefabricated control center and a field fabricated rack for individual controllers. The paper indicated that a typical arrangement of some 20 controllers would result in a saving of 5.5% in favor of the motor control center installation.

Should the quantity of controllers to be installed be considerably less than the typical example, the savings pendulum could possibly swing to favor the rack system.

The paper's example indicated that the equipment cost of the rack system was approximately two-thirds that of the motor control center; however this difference was more than balanced by the additional cost of installation and floor space.

The author also brought out a very important point that has been occasionally overlooked in the purchase of a motor control center, and that is its ability to match the available short circuit current of its power supply. He indicated that there are five possible methods by which the normal molded case breaker (1,500 amps) could be protected.

The choice between these methods would be, in general, made upon the degree of protection required and equipment cost. In connection with short circuit protection, he also stated that the bracing of the lens should be compatible with the choice of protective devices used. For two of his methods, the standard 25,000 amps bracing would be adequate while 50,000 amp bracing probably would be required for the other arrangements.

"Power Requirements of Tissue Machines" by C. C. Collins, General Electric Co., was the final re-

SIGVALD ANDERSEN . . .

Staff electrical engineer for the Central Engineering Division of West Virginia Pulp and Paper Co. in New York, he has had 12 years with that company. Earlier he was with the George F. Hardy consulting engineering firm in New York as its electrical engineer. He graduated from Polytechnic Institute of Brooklyn in his chosen field in 1941.



port of the last of a series of studies made by the TAPPI electrical engineering committee on the power requirements of all types of paper making machines. In essence, this report up-dates the data that were published in 1950, due to the subsequent change in machine design and operating procedures.

The author reviewed the components of a tissue machine and discussed the variance in drive constants due to different possible arrangements in the Fourdrinier and felt sections. The power constants developed in this study will be processed by TAPPI into a technical information sheet in order to provide an up-to-date working tool for the industry.

"Comparison of Types of Reel Drives for Converting Equipment" by R. J. Minges, Diamond National Corp., was the electrical engineering committee's first study of problems pertaining to the converter.

The author reviewed the various types of reels (or winders) together with their drive and control requirements. He also outlined the advantages and disadvantages of each machine. Regardless of type, the number one point of each unit appeared to be tension control. The various systems were discussed in great detail with their advantages and disadvantages being enumerated.

It was brought out that the major-

ity of converters have very limited engineering facilities and, therefore, they should exercise great care in specifying their machine and drive requirements. As a guide in this direction, the paper concludes with the listing of six pertinent and detailed questions that should be realistically answered: (1) What are minimum and maximum web speed requirements? (2) Minimum core and maximum roll diameter requirements? (3) What is material to be wound? (4) What are advantages of continuous winding? (4) What is next process on which wound rolls will be used? (6) What range of tension is required for winding? All questions must be carefully and accurately answered.

The answers would then be the basis of a specification, after reference to the machine comparison table, so that all bidders would quote on an equal basis.

"Grounding for Safety in Pulp and Paper Mills" was given by E. C. Benjamin, M. W. Kellogg Co., and J. V. Cundelan, Rayonier Inc. The authors approached the subject from the view that while the need of equipment grounding is recognized by all of us who are involved in electrical installations, seldom do any two individuals or groups see eye-to-eye on the needs of a particular installation, in spite of the related portions

Continued on p. 106

Engineer's Obligations to His Firm

Market-oriented approach is needed in the "slugging sixties"

By BENTON R. CANCELL, Executive Vice President, Manufacturing, St. Regis Paper Co. and President, Rhineland Paper Co., division of St. Regis

MOST ENGINEERS may feel they have but little interest in . . . the sales and marketing problems of their respective companies.

Admittedly, the last year has seen major and significant engineering and technical advances, but in all too many instances these advances have had but little relation to a well-conceived marketing philosophy—and being so unrelated, have often failed to achieve the economic and profit goals for which each company strives.

I propose to talk more about the obligations and opportunities which lie ahead of the engineer if we can aggressively overcome the wide gap which exists between engineering and marketing and if we can fill that vacuum with a high degree of teamwork, mutual confidence, and an understanding of the common problems between engineering and sales.

Despite the often-expressed fears of certain federal government agencies that competition in the United States is lessening because of mergers and consolidations, the fact is that competition in the pulp and paper industry is aggressive and severe, both in domestic and foreign markets. Such competition has manifested itself in the rapid flow of improved products, new products and new processes—aimed at expanding market opportunities, reducing costs and expanding profits.

The fact is, if one examines the financial record of the pulp and paper industry, that with very few exceptions, the trend of profits has been downward (almost in reverse proportion to new technical developments), both as a return on sales as well as on capital invested in the business.

Competition has been increasing between the pulp and paper industry and the products of other industries, notably plastics in various forms. Just as dissolving pulp, paper and paperboard made serious inroads into the consumption of silk, cotton, burlap and lumber in the respective areas of textiles, bags boxes and other packaging, so we are now feeling the aggressive competition of synthetics in the pulp, paper, and paperboard industries. Fortunately, intelligent technology and engineering have found

(While PULP & PAPER published in its last issue a substantial summary of this keynote address at the TAPPI Engineering Conference, it has been praised so highly in the industry, not only because of the speaker's high standing and broad experience, but because of what he had to say, that PULP & PAPER decided to publish his entire speech in this issue—Editor's Note.)

that in many instances paper, paperboard and plastics complement each other and combinations of these materials have resulted in new products and new and expanded markets.

But competition in the pulp and paper industry is not a domestic affair only. Competition from foreign producers, both at home and in overseas markets, has now become a fact of urgent importance to American industry. The remarkable technical and economic development in Western Europe and Japan has changed the entire complex of world trade relationships between our industry and the producing industries of these various countries. The easy time that prevailed immediately after, and for some years following World War II and the period immediately following the Korean War, when there was a great unfilled domestic and foreign demand for the products of the pulp and paper industry, has vanished. Barring a major war—which I for one do not believe will come—the easy domestic and foreign competitive situation will not recur—at least in the lifetime of most of us here.

To illustrate my point, in the last decade finished manufactured goods made up the bulk of American exports. But in the past seven years, exports of American goods have increased only 8% while world trade in such items has increased 40%. The balance of that increased trade is, of course, going to other industrialized nations. Significantly, during the same period our imports of finished manufactured goods has increased 250%.

True, American exports of pulp and paper have increased beyond the average of other American goods during the seven years referred to, but such exports have fallen far short of balancing the overcapacity which has existed in the pulp and paper industry and at the same time, new foreign productive capacity has been expanding rapidly.

Establishment of trading blocs, politically so necessary to world peace (and I refer to the European Common Market, the Outer Seven and the probable establishment of a Latin American Common Market), pose a further challenge to the American pulp and paper industry for we no longer have a "corner" on technology and mass production methods. Nor has there been any evidence of an awareness on the part of organized American labor of the responsibility and obligations which they bear to help keep American industry competitive in this shrinking world.

If, as individual companies, we are to meet this competition against other domestic producers of pulp and paper, of other domestic producers of substitute materials, and of foreign producers in both domestic and foreign markets, we must then be prepared to produce better goods at lower costs and to aggressively sell and service customers who may have a wide choice of suppliers and products from which to choose.

Is this only management's responsibility? You may well be saying at this point, "What has all this to do with me as an engineer?"

Do you remember the admittedly corny story of the man interviewing bricklayers on the job? One said he was working so that the family could eat; a second said he was carrying bricks up the ladder and putting them in place; a third said he was building a great cathedral. The third man had imagination and an understanding of his significance in the scheme of things—an understanding of the end use of the work he was doing.

No technical or engineering project should ever be undertaken as an end in itself. It must have some underlying purpose which may be one or a combination of:

1. Maintenance of the property for
- Continued on p. 132

Problem: Protecting tractor fuel systems in the winter

Solution: Most important solution is to keep moisture out of the system. Cool temperature condenses moisture from the air. During cold nights, as the air in the top of the fuel tank cools, water forms and settles to the bottom. From there it can travel through the fuel system, settling in low places in the fuel line and in the base of the fuel filter housing. When the tractor stands overnight in freezing weather, these collections of water turn to ice.

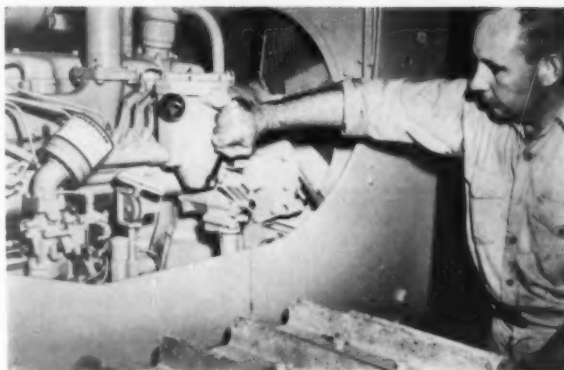
When temperatures start dropping in the fall, tractor owners are quick to protect their cooling system against an unexpected freeze. Too often, however, they forget to check this second possible collection of water that is equally certain to shut down a tractor as frozen coolant.

Frozen fuel lines do not necessarily have to put a tractor out of operation. Simply filling the fuel tank at the end of each day's work drives out all moisture-laden air and almost entirely eliminates water from condensation.

In spite of faithful evening refuelings, though, some moisture will get into the system. Since it is heavier than diesel fuel, it settles in two predictable places.

The first is at the base of the fuel tank. In warm weather it is recommended that water be drained from the fuel tank before starting the engine in the morning. This assures that only clean fuel will leave the tank that day. In freezing weather, however, an owner takes a chance on a possible freeze-up by waiting until

TO PREVENT FREEZING in fuel system of tractor, water should be drained from both fuel tank and fuel filter housing (shown) at end of working day.



morning to drain collected water from the fuel tank. Instead he should drain it at the end of the day, after allowing the tractor to sit a while to give water a chance to settle. During summer operation, water in the fuel tank should be drained every 125 service meter hours. To be safe in winter, drain it every 50 hours.

The second moisture drain on some fuel systems is at the base of the fuel filter housing which contains a sump to trap any remaining moisture carried in the fuel. When the temperature is below freezing, trapped water in the filter housing should be drained each day before the operator goes home at night. Trapped air may have to be bled from the system after moisture is drained from the filter housing.

The pour point of the fuel being used also has to be considered during cold weather. To assure free fuel flow,

use fuel with pour point at least 10° F lower than the lowest ambient temperature during working hours.

Don't wait for freezing weather to change to winter grade fuel. Wax in "summer grade" fuel may start to gel at temperatures above freezing, partially plugging the fuel filters. Since wax content is the prime factor affecting the pour point, switching to low pour point fuel early in the season will reduce the danger of filters becoming clogged by wax during sub-zero weather.

Regardless of when you change to "winter grade" fuel, watch the pressure gauge more closely than usual. It tells when filters are becoming clogged.

These hints on winter operations of tractors have been provided through cooperation of the Caterpillar Tractor Co.

Problem: Safe cutting of pulpwood cables

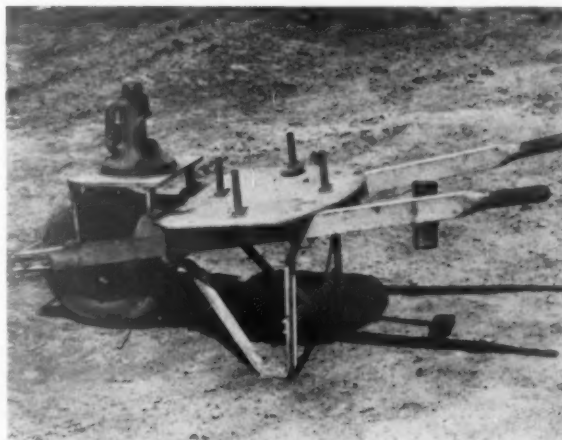
Location. Woodyard of Rayonier Inc., Jesup (Ga.) division.

Solution. Portable cutting device with a rack for a sledge hammer and provisions for transporting a coil of cable held in place by four upright pegs.

At first, says Rayonier, there seemed to be no problem. Small cable cutters, lighter than the one shown mounted on the wheelbarrow, were available at certain locations in the woodyard. This worked fine until the cutters disappeared. More were supplied but these too disappeared.

Next, old chipper knives were used for cutting. Sharp fragments would often fly from the brittle knives, cutting the flesh on unprotected skin. Fortunately no eyes were lost during the trial-and-error period.

Then the woodyard crew, under supervision of Merle Crews, developed the idea of this portable cable cutter. It is too large to be taken out of the mill readily, but mobile enough to be easily taken to any part of the woodyard.



Cost Controls — A to Z

Examples of cost reducing programs described at meeting in South

By WILLIAM F. DIEHL Jr., Southern Editor

New Orleans
IN ONE CHEMICAL PLANT in the South a leaking steam valve was costing the company \$613 a week yet it went ignored for months. Showers were frequently left running with no one under them. Cost: Several thousand dollars a month. Condensers often continued running hours after the condensation cycle was completed. Cost: Also in the thousands.

A concerted effort on the part of management, as well as a carefully planned educational and publicity program to make employees aware of such waste, resulted in an annual saving in steam, electricity, compressed air and water of \$876,000!

These facts were a few eye-openers provided at an electrifying session on cost controls at this year's Southern and Southeastern Superintendents PIMA meeting at New Orleans' Jung Hotel.

Waste . . .

Waste—often ignored as bothersome or insignificant—can run to six figures. Witness one mill which made a careful survey of its mill, noting such things as the use of steam traps rather than shut-off valves, running water hoses, leaky valves, condensers running aimlessly after their job was done. Cost: Several hundred thousand dollars a year. How could it be stopped?

The answer lay in a four-fold program. First, education. Employees were made cognizant of the importance of preventing waste. Steam escaping from a tricky line was dollars hissing into the air. Water from showers left running was dollars down the drain. Once the problem was spotlighted a publicity program to keep focus on it was carried out. Technical assistance was then brought in to repair breakages, prevent future failures. Finally daily personal contact with the men in the mill was maintained by line supervisors. During the first year, the plant saved \$876,000 in steam, electricity, water and compressed air waste.

The answer was mass motivation. Employees became so aware of waste that failures were frequently spotted and fixed in a single day. The plant finally had open house during which each employee who had submitted helpful ideas on how to prevent waste was given a stall in which to exhibit his ideas. The program is a continuing one, savings in the six figures are still realized.

Inventory . . .

An inventory control board in another paper mill reviewed all minimum and maximum inventory levels, made reductions all along the line, set up new inventory rules. Cost savings the first year: \$50,000.

One reason, it was pointed out, is that a \$600,000 reduction in inventory results in a \$140,000 saving every year. If a firm's profit margin before taxes is 19%, a saving of \$1,000 in processing or inventory amounts to the same as \$5,600 in sales. In the 10% profit margin, the company must earn \$10,000 in sales to net a \$1,000 inventory reduction.

With these figures in mind, the mill set out to do something about inventory.

Step one: Establishment of an inventory control board consisting of the materials manager, storekeeper, preventive maintenance supervisor and inventory control supervisor. In addition to reviewing inventory levels the team also observed operating procedures such as wire and felt changes and stock changes for possible savings in materials and man-hours.

Step two: The board recommended reduction of 25 to 30-day inventory of raw materials and operating supplies to a 5 to 15-day supply. Savings were in the thousands.

Step three: Inventory on valves, stock controls and other parts was drastically reduced for a saving of more than \$100,000. Another \$15,000 reduction in cost was realized by eliminating a foundry and purchasing castings.

Step four: The service department

and garage maintained to service some 200 company-owned vehicles was disbanded and the contract was let to a local garage. Saving of \$25,000 a year resulted.

The company is now in the process of reviewing all company-operated service departments to determine whether outside service is cheaper. Grounds maintenance is now handled by an outside contractor and other services will be contracted soon. Their conclusion: Anything which does not directly involve the making of paper should be carefully scrutinized. The firm is now looking at finished goods inventory as another possible area in which costs can be lowered.

Operating . . .

Focus on cost control in another paper mill has resulted in cost reduction becoming the number one item on the agenda of a monthly department head meeting. Cost reduction is now a line responsibility, with every department head responsible for cost savings in his department. From this accent on costs came the birth of a mill cost reduction program.

First thing to come under fire was high labor cost. Over a seven-year period, man-hours per ton of paper were decreased 70% and paper production during the same period increased 20%. Labor cost per ton, by organizing work and operating procedures better, was 11% lower in 1961 than in 1954 although across-the-board wage increases were granted every year during that period.

Examples of labor savings: Beaters were relocated to reduce refining time; pulp mill was reorganized, resulting in elimination of the entire Sunday shift; superintendents are given time to keep up with latest developments designed to increase wire and felt life; some 80% of wood within a 35-mile radius of the mill is now being trucked in, saving on freight costs; wood is now measured by weight rather than volume as a result of carefully scrutinized tests; safety is emphasized more than ever before,



C. A. Shoudy
West Virginia
Pulp & Paper Co.



A. B. Gregory
Riegel Paper Corp.



John Taggart
Mead Corp.



Hall Whitworth
Champion Paper
Co.



Roy Barnes
DuPont Co.



Jack Meadows
Crossett Paper
Mills

Cost panelists give pointers on how to reduce costs

1. Educate employees to avoid waste.
2. Scrutinize inventory systems—dollars saved in inventory equal hundreds of dollars in sales.
3. Appraise all service functions not directly concerned with making paper—outside service may be cheaper.
4. Make cost reduction a mill-wide program.
5. Make cost control a function of line management—all supervisors should be cost conscious.
6. Organize maintenance programs so preventive chores can be done during scheduled shutdowns.
7. Keep check list on all equipment, which includes average repair and maintenance times.
8. Relocate equipment where it can be easily reached by repairmen, and with an eye toward reducing operating time.
9. Study wire and felt changes for wasted motion.
10. Organize . . . organize . . . organize . . .

reducing absenteeism and costs at the same time.

Maintenance . . .

"Maintenance is a necessary evil . . ."

With this comment under his belt, another panelist proceeded to give some solid pointers on maintenance savings.

Suggestion: Work closely with suppliers to improve maintenance costs. A pump, for instance, if designed so that it can be torn down and assembled faster than it was before, saves maintenance dollars. Equipment often can be relocated so it is easier to get to and work on when preventive maintenance or repairs are required. Result: Saved time, therefore saved labor, therefore saved money.

Another suggestion: Establish a maintenance control center "so you run the machinery instead of it running you." This control center coordinates all maintenance jobs. When job can be handled by only one man at a time, only one is sent. Nobody stands around waiting for his turn. This not only prevents lost labor, but frees a man for a job elsewhere.

Complete set of records on each maintenance job is kept in this mill and preventive maintenance is planned down to the hour during normal shutdowns. This record is coordinated with wire and felt changes so many of these jobs are carried out while the machine is down anyway. **Another helpful hint:** A complete check list of all supplies. A record of every piece of equipment is kept, all tools are accounted for, check list

also includes average repair time and length of service of equipment so changes can be planned well ahead. The area millwright also uses a check-off sheet to make a constant check on all machinery. If a piece of machinery is acting up it is scheduled for breakdown and repair during next four or eight-hour shutdown.

The annual spring shutdown in this mill is planned like a military operation. All major maintenance checks and repairs are made and each man is given a list of jobs which must be done and the time he must do them in. At present, thanks to planning, a complete wire change plus maintenance throughout the machine while it is down takes less than eight hours.

An example of the effectiveness of this program can be seen in the time it takes to change a brown stock washer face wire. It formerly took eight to nine hours for this change. By stop-watching the operation, noting lost-time operations and reorganizing the job, the time has been cut to four-and-a-half hours and labor involved was sliced 50%.

Organization . . .

One thing seemed to prevail throughout all the talks at New Orleans—cost reduction and organization are as dependent on each other as Siamese twins. Unfortunately, as one panelist pointed out, cost reduction programs are frequently instigated during periods of poor market conditions, tend to fade away when the cash register music grows happier. So continuity enters the picture.

Depth of responsibility was another recurring theme. As a result one mill has made cost reduction a completely organized, full-time program and a routine function and responsibility of line management. Frequently broad cost items must be broken down in order to be of value to a department head, so coordination between line men and accounting and statistical departments is also imperative.

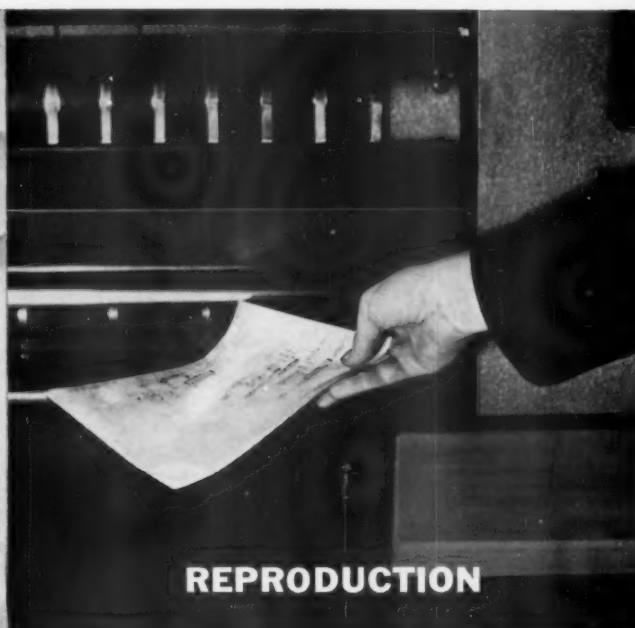
One mill uses two basic reports as a basis for its cost control program. The first is an overall review of operations reached by a combination of selected costs per ton, raw material usage, daily and monthly production rates and man-hour figures at key points in the overall process along with sales experience and dollar results. This report is then compared with the budget and previous operating reports. This report is available for all department meetings and is the basis for a monthly meeting of all line managers.

The second report is used at weekly meetings. It is a typical overtime report and each department must account for all overtime hours. Maintenance overtime is discussed in detail. Since most overtime results from emergencies, this meeting also serves as a review of equipment and operating procedures.

The important thing emphasized throughout this session was the necessity for avoiding a feeling among supervisors and superintendents that cost reduction programs are "crash" programs to be emphasized only during bad times. They are a "must" all the time—to prevent the picture from worsening in bad times, and to avoid "profitless prosperity" in good. ■



FINE WRITING



REPRODUCTION



OFFSET



GIFT WRAPPING

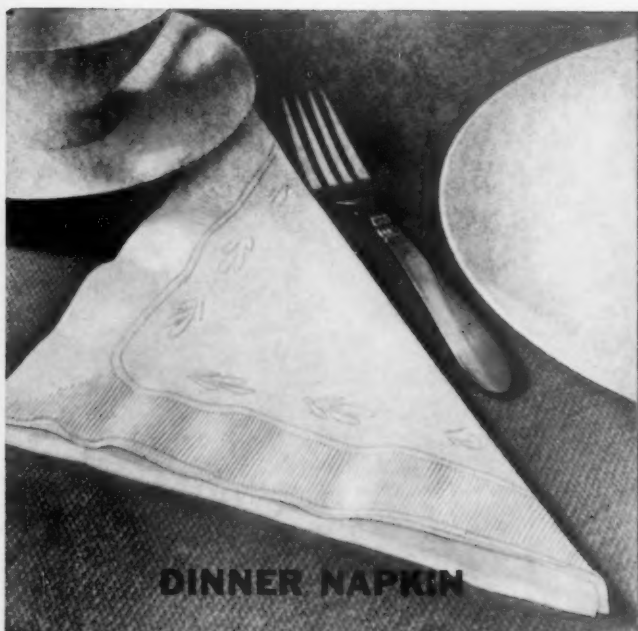
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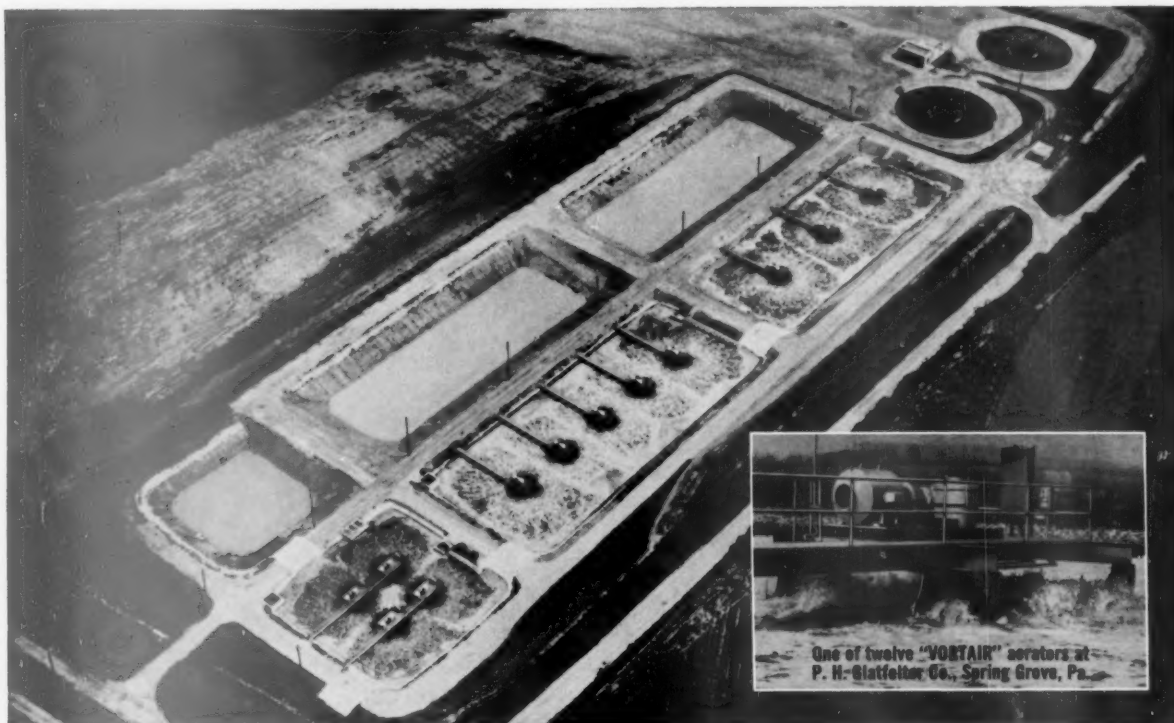
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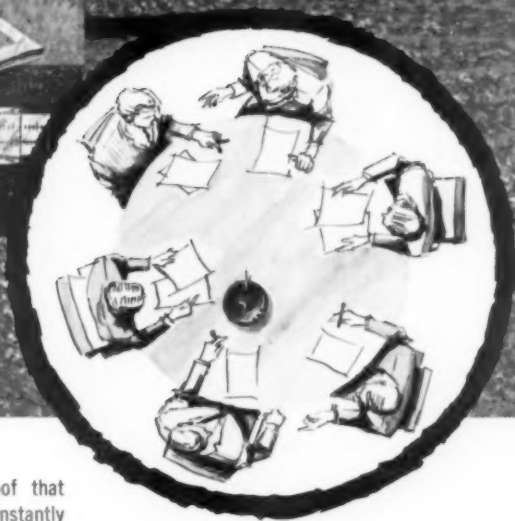
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Underwater photograph of "VORTAIR" aerator in operation.

541-A

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on the
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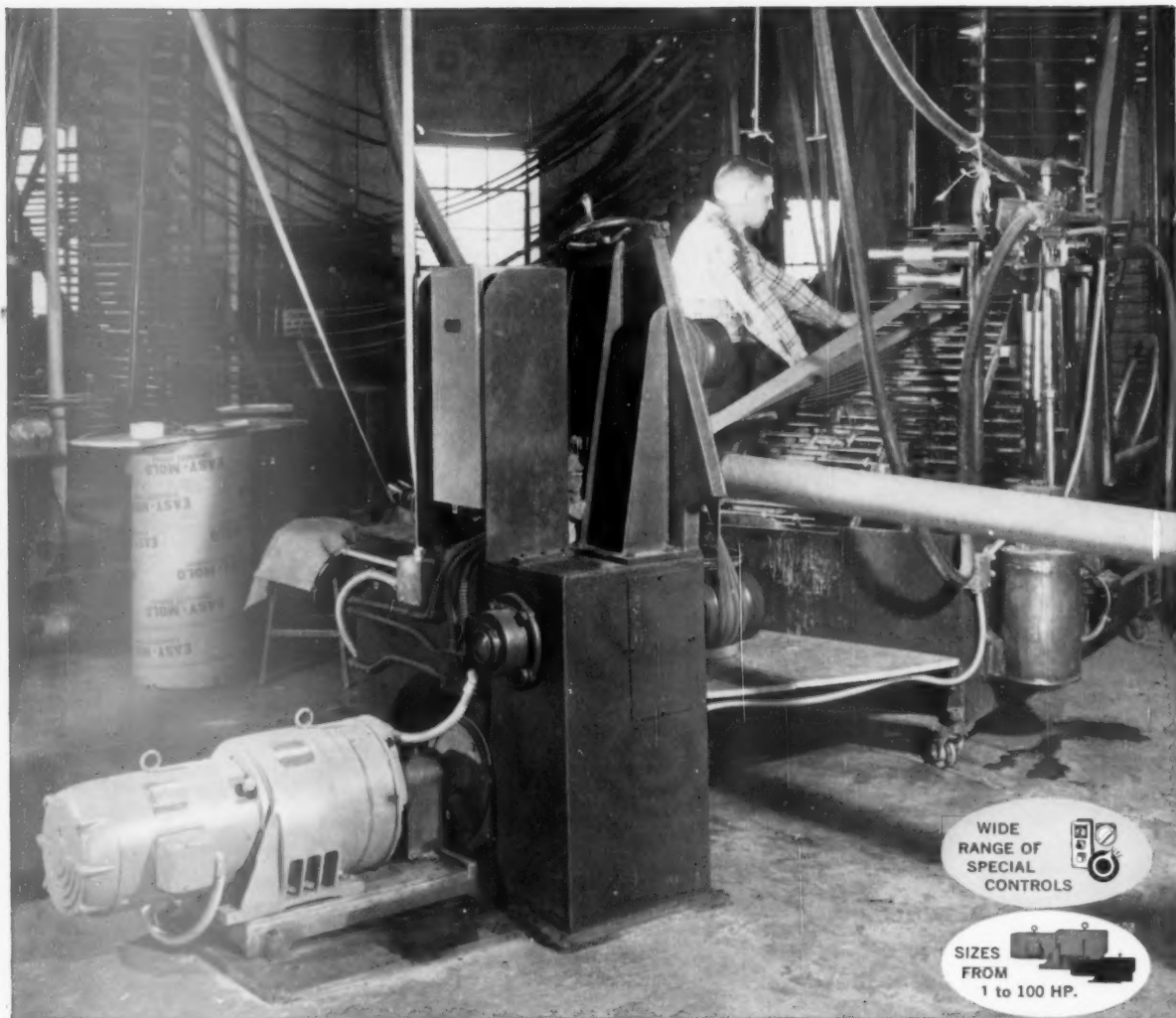
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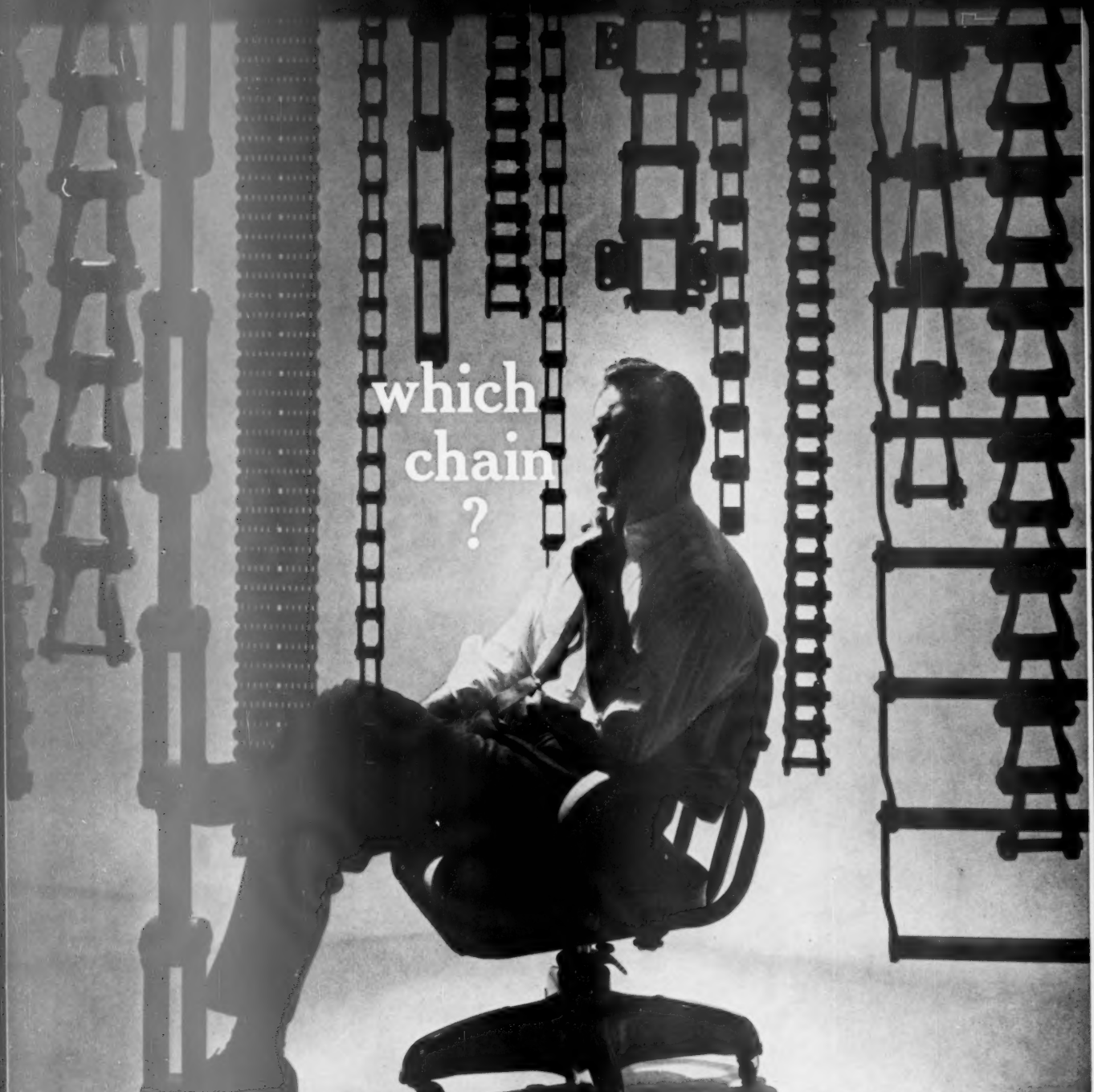
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15.714



SOFTWOOD CHIP INVENTORY overlooks Scott's Winslow mill. Radar Pneumatics Inc. reclamation pipelines at base of pile speed hardwood and softwood chips to woodroom for screening, and to digester builder. Formerly, logs were floated down canal and under bridges where they were hand sorted.

OCS Trims Costs in Northeast

Scott at Winslow, Me., now is able to do all chipping in 4 to 5 months, whereas it formerly was 9-month to year-round job

By PETER INSERRA, Assistant Editor, PULP & PAPER

WINSLOW, ME.—A softwood chip pile of 120,000 cords, towering 110 ft., from a base 800 ft. by 420 ft., is symbolic of Scott Paper Co.'s \$2.7 million conversion to outside chip storage here, which could usher in a new era of pulpwood handling in the Northeast.

"We are now in a better position to compete with mills in the West and South," said George Blessing, Winslow mill manager. "Although it will be many months before we have any solid findings from our project, we can say that the potential of the new system looks good."

Scott engineers say that pulpwood handling time will be halved by using chips rather than traditional crane-handled roundwood. Daily pulp production averages 385 tons. Paper production from six machines averages 450 tons a day.

The pile, which passed the 100-ft., 75,000-cord level this fall, now is the largest east of the Rockies. In the Northeast, Howard Smith Paper Mills in Ontario has the only other sizable OCS (outside chip storage).

Heart of the Scott system is a chipper installation, built at a cost of \$1.8 million, and equipped with a

327 rpm, 1,500-hp chipper drive, one of the largest in the industry. Up to 80 cords or nearly 200 tons per hour have passed through its 110-in., 15-knife chipper disc, night and day, since April start-up.

Major reason for the conversion to OCS, according to Mr. Blessing, is to cut down high handling and storage costs of roundwood. Scott now stores one-third of its inventory, or about 60,000 cords, in roundwood piles. Of that amount, 25,000 cords are softwood. All hardwood is brought in by contracted truckers from private lands. During the first six weeks of

... Scott outside chip storage

operation, 30,000 cords of hardwood were chipped and sent to storage.

Al Garrett, assistant plant manager in charge of production, said that the conversion, still in the transition stages, has followed a basic concept of industrial engineering which he called "eliminating and combining."

"We do our softwood chipping in five months and our hardwood chipping in four months. Formerly, we chipped softwood all year round and hardwood nine months of the year, all indoors."

In line with this concept, an 84-in., 10-blade chipper was moved from the woodroom to the outside installation where it is held, in reserve, for use when heavy production is needed. Bark burning has been combined with the new OCS operation. For the past eight years bark accumulation in dump piles in the neighborhood had become a storage problem. A bark press and boiler conversion were included in the improvement at a cost of \$600,000.

Pulpwood handling begins
with a spring drive on the Kennebec

River. Logs are floated an average of 125 miles from Scott's 640,000 acres in Maine. Scott also has 400,000 acres in New Brunswick and Nova Scotia.

A conveyor-sorter in the river at the mill drags logs up a ramp and dumps them onto sorting tables. Logs marked with a blue dot are routed downstream to Hudson Paper Co. at Augusta. Of the 249,000 cords that will be river-driven in 1961, 190,000 cords will be chipped by Scott.

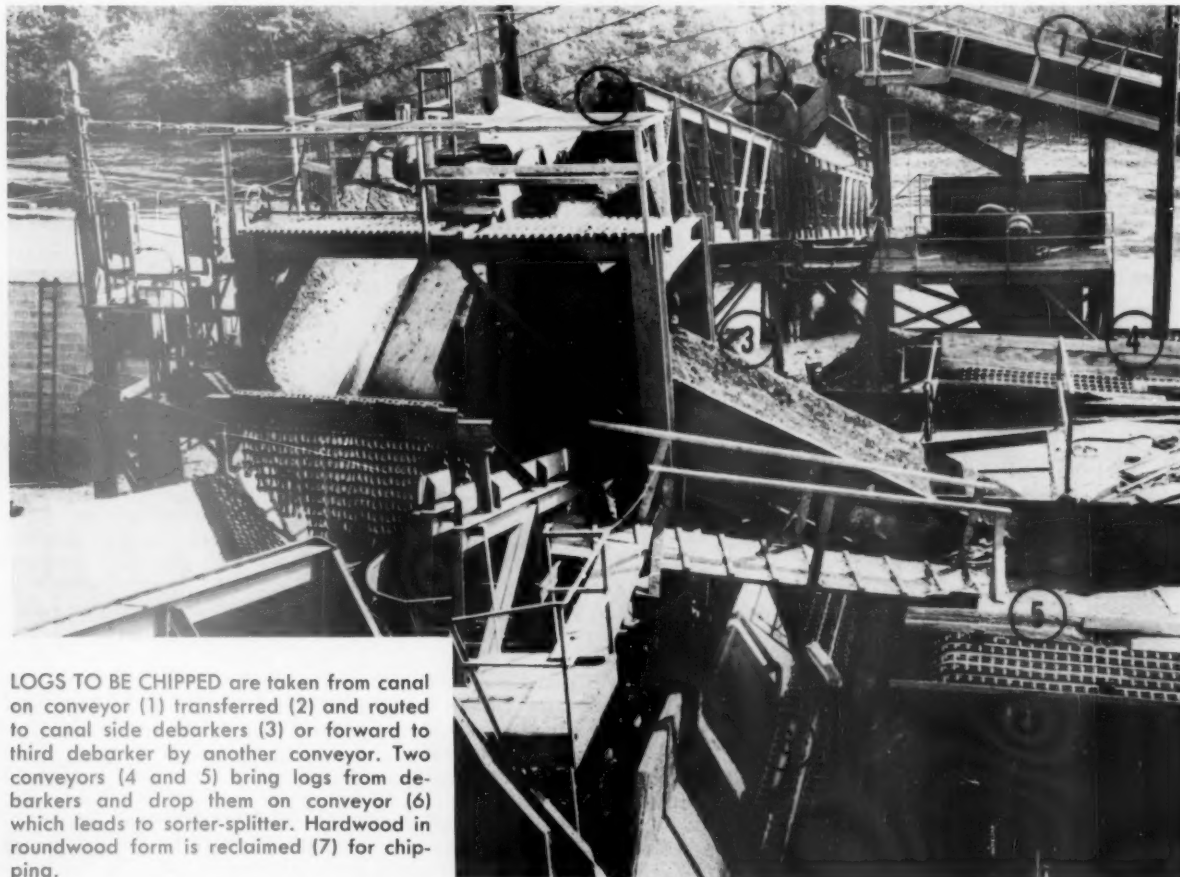
Scott's logs, routed into a canal adjacent to the river, are carried from the water by chain conveyors and sent to one of three barking drums. Conveyors can be controlled to allow logs to go to either of the two drums closest to the canal, or to the third drum on the west side of the yard. Both shells on each of the east drums were replaced as part of the change-over to OCS. Drums are 12 ft. in dia. by 45 ft. Each is rated at 23 cords of softwood or eight of hardwood per hour.

From the de-barkers, logs are high pressure-jet-washed and sent to the sorter-splitter section at the south end

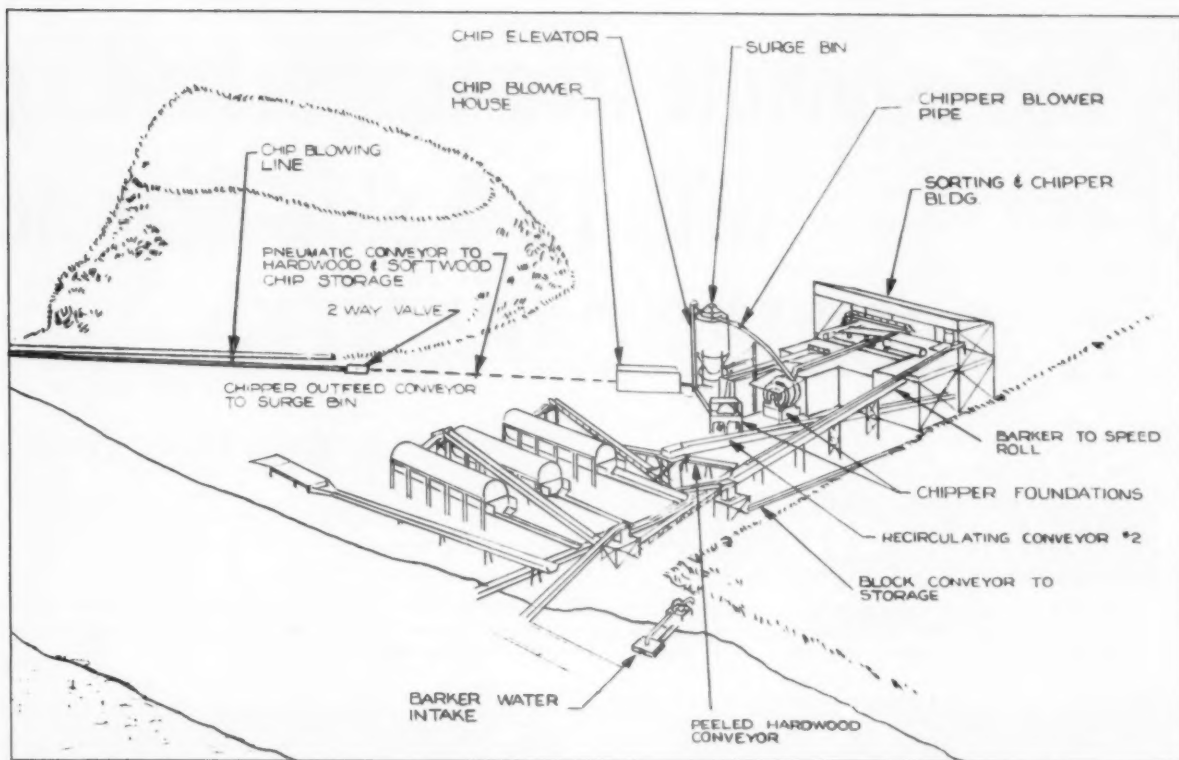
of the installation. From here, logs are sent to the chipper, or reconveyed back to the drums for more tumbling. From the chipper, chips are conveyed to a 15-cord capacity surge tank. It would take 10 minutes for this unit to fill if blowlines were shut down in an emergency. A plate feeder then deposits chips onto another conveyor, which in turn feeds chips to a motor-driven star valve for induction into the pneumatic system. Chip metering and feeding, now manually adjusted, will soon be converted to automatic control.

Pneumatic storage lines to both piles are 22 in. in dia., are under 8 lb. psi, and can feed up to 200 tons an hour to the pile. Reclaim lines are 16 in. in dia., are under 4½ lb. psi, and can feed up to 100 tons an hour to the mill. Softwood chips travel about 1,700 ft. to the pile, and hardwood chips are blown about 500 ft. to storage.

Don Ormsby of the Winslow Engineering Department worked closely with H. A. Simons, Ltd., Vancouver, B.C., consulting engineers, and with Scott's staff engineering team in the



LOGS TO BE CHIPPED are taken from canal on conveyor (1) transferred (2) and routed to canal side debarkers (3) or forward to third debarker by another conveyor. Two conveyors (4 and 5) bring logs from debarkers and drop them on conveyor (6) which leads to sorter-splitter. Hardwood in roundwood form is reclaimed (7) for chipping.



CHIPS FLOW from wood processing plant at right to separate storage piles at left.

design and control chip storage areas. Mr. Ormsby said terrain of the former 70,000 cord roundwood site adjacent to the mill was contoured into a "shelf" to accommodate up to 120,000 chip cords. A layer of gravel, ranging from a few inches up to 5 feet, was spread to level of a dirt and rock base. Used dryer felts were placed over the gravel to avoid chip contamination when reclaiming a low pile.

Although more roundwood can be stored in the same given volume than can chips because nature's fiber compaction is superior to man's, chips can be piled higher at a safer angle of repose, usually around 60°. Roundwood has to be piled partly in tiers, a costly hand operation.

Anticipated effect of interior chemical reactions or external weather conditions have been considered critical to the height of chip piles. A small test pile placed by Scott on the site a year before the full-scale move was undertaken showed any such effects to be negligible. Then, and only then, pile height was calculated primarily on the basis of pulpwood needs.

Temperature of the softwood pile rose steadily to 145° throughout the pile and has stayed at that level. Southern mills report higher and less consistent temperatures in their piles, but usually this is attributed to higher bark content in chips used for kraft operations.

The pile will be subjected to seasonal temperature ranges of 30° below zero to 90°. No heavy rains or snows have fallen yet, but it is expected that a surface layer of chips will act as protection against water seepage into the interior of the pile, much as shingles overlap and keep the inside of a house dry. Great amounts of additional moisture might increase the temperature of the pile, although evidence to date is small and available only on the hardwood pile. There, delicate instruments showed the pile to be warmest where it was wettest, but this apparently did not affect chip quality to any degree, Scott said.

Winter conditions should not impair recovery of chips, or chip quality, Scott says. Basing their predictions on the experiences of Howard Smith Paper Mills, whose outside chip pile is in the same latitude as Scott's, and on their own test pile results, Scott expects a layer to freeze on the surface, 12 in. to 18 in. deep. This layer then will be broken through by a dozer and chips, kept "molten" by pile temperature, will flow readily to the recovery house at the base of the pile.

Moisture content in the softwood pile is 50% to 55%, and in the hardwood pile it is about 37%. Moisture content is lower in the hardwood pile because moisture evaporates from

hardwood stored outdoors for several months prior to chipping. Sources of moisture in the softwood pile are water absorption from the river drive, water content in the air, and—what is an unusual aspect of chip handling at Scott—from water induced into blowlines to speed chip flow and to increase chip capacity in the lines. Rader Pneumatics engineers, who installed the pneumatic system, say that injection of water changes air pressure which results in greater capacity.

Fog formation on the pile in morning and evening hours, is caused by rapid cooling of the air and the slower cooling of moisture in the pile. At first a problem to safe and efficient dozer operation, fog now is combatted by setting fluorescent sticks at the periphery of the top of pile to reflect dozer's headlights.

But the addition of water to chips has helped Scott alleviate a neighborhood problem. Fine grains, spouting from the pneumatic line on top of the pile, were being caught by the wind and sometimes were blown to nearby residential areas. The added water helps keep these grains closer to the pile. In addition, a dozer maintains a "valley" across the top of the pile in line with the spout of the blowline.

This move has created a production problem for Scott. . . turn to p. 104

Ton-a-minute tree-length loading with TD-9 Skid-Grapple **... DOUBLES CAPACITY!**

—for E. R. King, Perry, Florida

TD-9 Skid-Grapple capacity keeps the trucks cycling without waiting in line—thus steps up production of other machinery in the spread. For stability and go-anywhere traction, TD-9

tracks have 81½" of length on the ground. TD-9 tracks are Dura Roller equipped—the precision-sealed, long life track rollers with 1,000-hr. lube intervals!



"Our International Drott TD-9 Skid-Grapple loads out 25 tons, averaging 35 trees, in a minimum of 25 minutes," states Pulpwood Contractor E. R. King, Perry, Florida. "The TD-9 grapple is more efficient (than previous method) and has a terrific safety advantage because of the positive hydraulic grab arm.

"The one-man TD-9 grapple operation cuts our former loading time in half, and saves two men. And TD-9 grapple maneuverability permits faster loading-ramp discharge for the skidding tractors, which increases their efficiency.

"I've tried several methods and the TD-9 Skid-Grapple has proven best."

The King operation cuts 1,000 tons of tree-length pine pulpwood per week for Buckeye Cellulose Corporation. Production is 200 tons per 9 hours. Loading rate is governed by the speed of the skidding operation.

You get "production line" efficiency with every size of International Drott Skid-Grapple. Every size gives you the positive load-control advantage of the exclusive, original top grab-arm. No more log-at-a-

time juggling with end tongs or grabs—no more truck-banging by A-frame rigs. "Bear-hug" grab-arm grip, under separate third-valve control, lets you spot-place each grapple-full with ease and safety! And the direct-start 6-cylinder International TD-9 diesel crawler gives you 71 load-walloping "horses." Turbocharging crams in "air to spare" for clean combustion, peppy performance at all altitudes.

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... Scott outside chip storage



SOFTWOOD CHIPS, shown at 100-ft., 75,000-cord level, sprawl over 400 ft. in width. Water-gun towers protect chip pile from fire.

starts on p. 101 . . . The month of the blowline, kept close to the pile in an effort to further prevent chips from being carried out of the mill area by wind, can't distribute chips in a uniform arc across the pile. This means that additional dozer man-hours must be used for distribution of chips. To achieve maximum production, the dozer must move a minimum distance from the point where it gathers chips to the point it distributes chips down the sides of the pile. Scott engineers say an "ideal" push distance, for this operation at least, is 100 ft. Scott's dozer with an 18 ft. by 6 ft.



RECLAIMING HOUSE at bottom-center of softwood pile contains revolving plate feeder which distributes chips to reclaim system. "Funnel" above house, essential for chip recovery, is formed by chips flowing down pile.

blade, pushing 2½ cords of chips per 100 ft. run, could handle 100 cords an hour.

A community relations problem Scott had to solve was eliminating noise which was being produced by two 500-hp blowers and transmitted along with chips out the blowline spout into the Winslow community. Scott solved this by installing over the motors, two "mufflers," 145 in. by 42 in. in dia.

A technical problem of its own which the company once faced early in its OCS program, and which it hopes to have solved now, was the condition created by chips tumbling down the sides of the pile and interlocking. This forms a barrier, or "bridge," preventing chip flow to the recovery house. Since the dozer can't operate on the steep sides of the pile, "bridges" must be broken by hand, a dangerous and costly procedure. Early in its experience with the pile, a "bridge" was broken only after eight hours. Scott says minimum and maximum tonnage flows have been worked out to prevent a recurrence.

Compaction of chips

by man is not as satisfactory as compaction of fibers in the log by nature, but storing chips rather than roundwood does cut down chances of fire in the woodyard. With OCS, there is more concern for flash fires across the surface of the pile. Compaction chokes off oxygen, necessary for oxidation and fire. Tests on some piles at other mills show temperature to be the greatest near the surface of the pile where oxidation can occur. Loosely stacked roundwood, on the other hand, burns quicker in a fire

as oxygen is sucked into the interior of the pile and acts as a stoker.

There have been no chip pile fires at Scott's mill, but protection is provided. Four water-gun towers and five ground hydrants surround the softwood pile. In addition, a deluge hose connected to a ground hydrant has been placed on top of the pile. One water-gun tower and a ground hydrant are positioned near the hardwood pile. Should this equipment not be sufficient, pumps which supply water to debarkers can be diverted to fire fighting.

Overall quality of pulp

made from chips stored outside has neither improved nor depreciated to any conclusive degree, Mr. Garrett said. Mr. Garrett said it is reasonable to assume that wood stored in chip form will season faster than roundwood stored the same length of time.

Although a boiler room smoke stack is only 100 ft. from the softwood pile, no fly ash has deposited on the pile, Scott says. A larger fly ash handling system included in the bark burning boiler conversion was a precautionary measure.

Conversion of the boiler

and installation of the bark press make it possible to burn bark with coal, or coal alone, if bark supply is cut off. The press was furnished by Fibre Making Processes Co. Hydraulic cylinders at 1,500 lbs. psi and 900 lbs. psi exert very high forces on the rolls. Moisture is reduced from about 75% to 57%. Boiler capacity is 330 tons of bark a day. Presently, only bark trucked directly from debarkers is being used. ■

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Capacity

ENGINEERS . . . setting standards for maintenance work

Continued from p. 87

of the National Electric Code.

They most thoroughly reviewed the core requirements, together with installation techniques. The paper included a family of curves which permits the selection of the size of the grounding conductor, which is related to the maximum available short circuit current and the interrupting time of the protective device. These curves should be a good checking instrument for those who have used other systems to determine the conductor size.

"Mill experience with Sealed Insulation Systems" was discussed by L. W. Porter of St. Joe Paper Co.

The introduction, in 1958, of open drip-proof motors with sealed insulation systems resulted in the most significant technical advancement for the users of general purpose electrical equipment in many years, particularly from an economic standpoint. In order to evaluate this new design for random wound motors, from a practical standpoint, the electrical engi-

neering committee surveyed the industry through TAPPI procedure.

Mr. Porter's interim report revealed that experience records with these motors have been satisfactory, although performance is not long enough to permit final analysis at this time. It was also indicated that the average horsepower per motor for the sealed unit was much larger than that for the TEFC units (1960 installations). Thus, it may be inferred that the latter are still more popular in the small frame sizes.

MAINTENANCE ENGINEERING

Labor savings of 20 to 30 percent are possible with control techniques

By R. S. WELCH, Vice Chairman, Maintenance Engineering Committee, TAPPI
(Especially written for PULP & PAPER)

MAINTENANCE MEASUREMENT and Control" was presented by Charles B. Clark, H. B. Maynard & Co., Inc., New York.

The technique of maintenance measurement and control as presented by Mr. Clark should be of prime interest to managers, plant engineers and industrial engineers. Ever increasing manufacturing costs have reduced the margin of profit in our industry; thus, we must look to ways and means of getting more for our maintenance dollars.

Inefficiencies that were tolerated or not recognized in years past can no longer be ignored. To improve our position, new techniques must be used. Mr. Clark has outlined such a technique that most engineers have had working knowledge of; however, it would be safe to say that most manufacturing operations in our industry have not made use of this method.

As pointed out in this paper there has been long standing controversy as to whether or not standards could be established for maintenance work. Several years ago "Universal Maintenance Standards" were formulated and the case histories indicate success. This is of great importance for now we have a method that can be used to measure the performance of the maintenance worker. This system has the potential of rather large annual maintenance labor savings of 20% to 30% from increased effectiveness of the craft work.

It will only be a cost reduction if

ROBERT S. WELCH . . .

Plant engineer at the Pensacola, Fla., mill of St. Regis Paper Co. for the past three years. He was formerly the plant engineer at the Hinton, Alberta, pulp mill built in recent years by St. Regis and Canadian Oils. He also was Kalamazoo mill engineer for St. Regis. He was born in northern New York and he graduated from Clarkson College in that area.

management takes the decisive action necessary to reduce the crew by a percentage of increased efficiency or transfers their efforts to needed areas that are not serviced adequately due to manpower shortages.

"Maintenance Practices Survey" was presented by H. Wayne Smith, St. Regis Paper Co., Pensacola, Fla.

The maintenance engineering committee felt the need to survey the pulp and paper industry regarding the general practices as they relate to the economics of maintenance. Fifty organizations were surveyed covering such areas as competence of paper mill maintenance mechanics, performance of maintenance supervisory personnel and maintenance organization and administration.

These data were classified according to the responses and it was striking to note most mills had similar problems.

Through the statistical survey report and panel discussion, it is appar-

ent many present practices are wasteful and present a challenge to our industry to improve our maintenance operations.

"Mill Experiences with Dissolving Tank Operation" was the topic discussed by R. W. Kent, Champion Paper & Fibre, Hamilton, O., and J. J. Yirak, Union Bag-Camp Paper Corp., Savannah, Ga.

The report covering dissolving tank operation experiences is a summation of considerable data that were collected from many paper mills. The survey, after this data had been compiled, pointed out a multiplicity of problems; however, because of this, it was very difficult to make concrete recommendations on design at this time. The maintenance committee feels that this serves only as an interim report and will be held in abeyance for review in about five years hoping at that time this will produce more meaningful information.



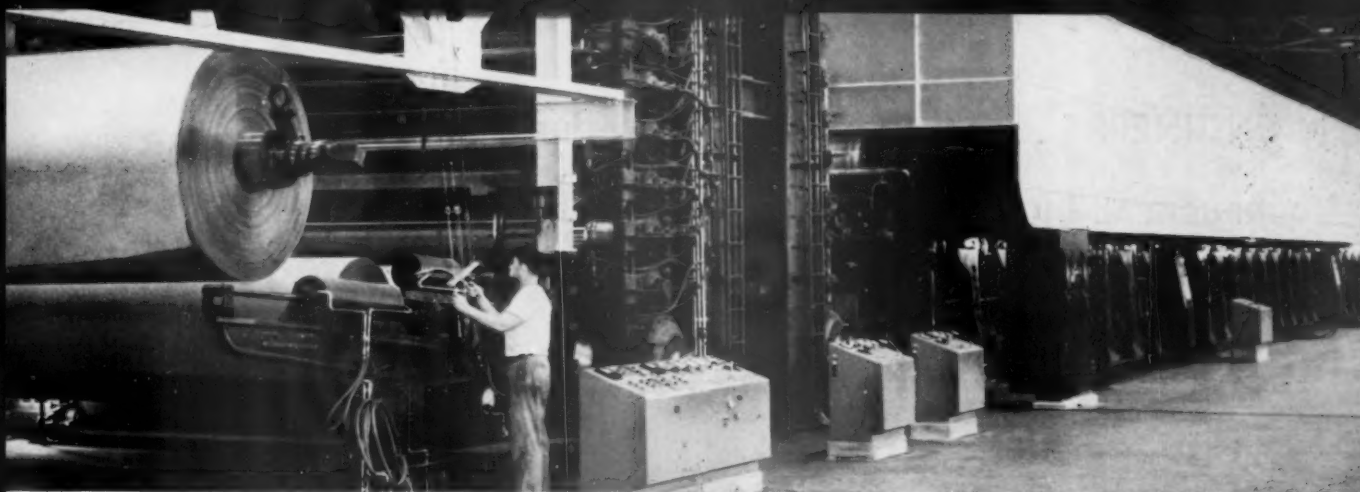


Photo shows dryer end of typical modern paper machine. Bearing temperatures on these machines may go as high as 370° F. Shell Paper Machine Oil was designed specifically to overcome lubrication problems in today's paper mills. (PHOTO: COURTESY ST. REGIS PAPER CO., JACKSONVILLE PLANT)

SPECIAL OIL:

Non-hydrolyzable Shell Paper Machine Oil helps prevent sludge deposits —even with today's higher dryer temperatures

Shell scientists developed Shell Paper Machine Oil specifically to combat lubrication problems found in the more severe operating conditions of today's paper mills.

It has excellent load-carrying properties. It resists rust formation, oxidation, foaming—and reduces sludging.

Here are the facts.

TODAY'S increased dryer temperatures have pushed bearing temperatures as high as 370° F. New lubrication problems have turned up.

With many conventional oils used for paper machine lubrication, lacquer and sludge deposits in oil circulating lines and in moving parts, such as bearings, can cause unscheduled delays, increase maintenance costs.

And in some cases, these oils do not tolerate water. Oil-water interaction may lead to plugged bag filters, stained metal surfaces. And even deterioration of cotton bag filter elements.

Shell's exclusive additives solve the problems

To overcome these problems, Shell scientists developed an oil containing special additives that resist interaction with water.

Shell Paper Machine Oil is specially formulated to resist rust formation and inhibit oxidation. And it has excellent load-carrying properties.

Three additional features

Here are three additional features of Shell Paper Machine Oil:

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- 3.** Shell Paper Machine Oil comes in two grades to suit a range of operating temperatures and steam pressures. Shell Paper Machine Oil 68—for steam gauge pressures of 30 to 50 psi. Shell Paper Machine Oil 72—for steam

gauge pressures of 50 psi and up. Minor fluctuations of temperature have little effect on the viscosity of either grade.

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ENGINEERS . . . recommended procedures for overlays

INDUSTRIAL ENGINEERING—MATERIALS HANDLING

Seven advantages of outside chip storage; a barker-chipper that goes to the woods

By **BURT C. KENDALL**, Chairman, Industrial Engineering-Materials Handling Committee, TAPPI
(Especially written for PULP & PAPER)

THE INDUSTRIAL ENGINEERING and materials handling committee presented two papers covering present-day operations in outside storage and handling of wood chips. One paper covered West Coast operations—the other presented Southeast experience. Although detailed economics were not presented, these brought out that sizable cost savings are resulting from the change-over to outdoor chip storage and handling, as against outdoor storage of groundwood.

Primary economic advantages of outside chip storage, as brought out by the papers, are:

1. Greater utilization of wood. Both papers emphasized this point, particularly pointing out chip installations in lumber mills. Paper mills in many areas have found it profitable to help capitalize on these chipping installations and are able to pay out their investment as chips are purchased.

2. Better control of inventories is obtained through additional sources of supply. Paper mills are able to program a faster turnover rate and are not solely dependent upon their wood mill operation.

3. Reduced deterioration of wood. Chips have been stored up to three years on the Pacific Coast with "little measurable deterioration." In the South, studies have shown lower fungi deterioration, practically no specific gravity loss over periods of three to four months, and losses from wood destroying insects are practically nonexistent in outside chip storage.

BURT C. KENDALL . . .

Assistant manager of industrial engineering for all Crown Zellerbach Corp. mills, he bases in San Francisco. Formerly he was division industrial engineer for the Western Waxide Division of Crown Z. Earlier positions—assistant to the manager of a small utility; engineer, time study engineer, production mgr. and plant superintendent, for Food Machinery Corp.



4. Reduced maintenance costs. Maintenance costs for chip handling equipment are considerably less than maintenance costs for wood handling equipment.

5. Reduction of capital investment is possible in some areas for chip handling equipment, if wood handling installations were to be replaced. Smaller, less expensive equipment can handle the same volume of raw material in the form of chips.

6. Reduction in labor. Some mills have been able to handle their entire chip supply with as few as three men per shift. Chip storage may complement present wood handling operations and eliminate costly weekend crews needed for wood handling.

7. Centralized control of chip handling and inventory is possible. The installation of outdoor storage and chip handling equipment in mills over a greater part of the United States has proven that it is possible to obtain

greater utilization of wood, obtain reduction in labor force, and capital investment, and a more positive control of raw material inventories.

A recent development of a portable debarker and chipper that can be driven directly to the woods brings forth other possible gains in the utilization of marginal wood that would be too costly to truck to the mill. (Editor's note: Reference is to a Nicholson Mfg. Co., Auburn, debarker-chipper).

It is further believed that the flexibility possible through the use of outdoor chip storage, particularly in the ability to segregate specie, will find that more and more mills will equip themselves to handle chips.

A third paper presented by the committee pictured a modern mill installation for storage and handling of roundwood. Where chip installations are not possible, up-to-date methods and equipment can be very effective for wood storage and handling.

CORROSION

Emphasis on materials and proper use; recommended procedures for overlays

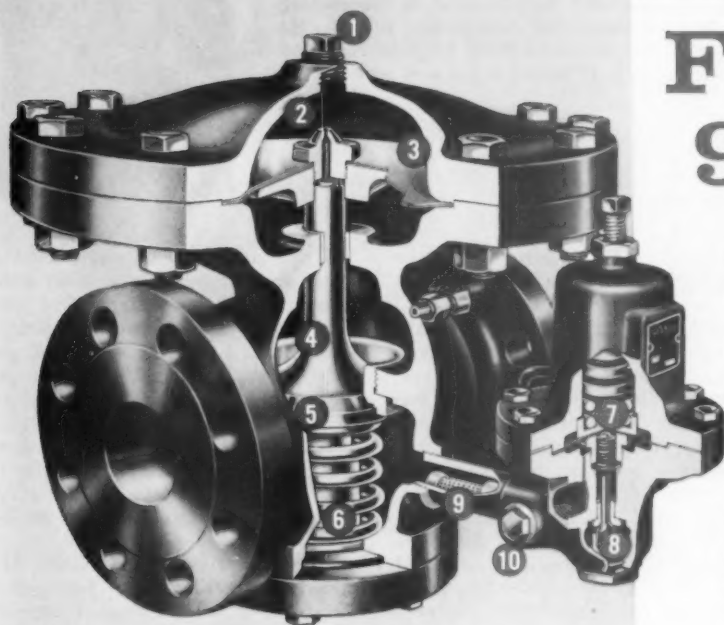
By **EDWARD W. HOPPER**, Chairman, Corrosion Committee, TAPPI
(Especially written for PULP & PAPER)

THE CORROSION COMMITTEE held two technical sessions at the Engineering Conference. Both sessions had from

125-150 present and showed that there is considerable interest in this subject.

The first paper, by F. H. Humphrey, Jr. of Metal Cladding Inc., North Tonawanda, N.Y., was "A New

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	250 psi @ 410°F	250 lb. flgd.	1 1/4" - 6"
NODULAR IRON	300 psi @ 450°F	Screwed	1/4" - 2"
	150 psi @ 388°F	150 lb. flgd.	1 1/4" - 3"
	300 psi @ 450°F	300 lb. flgd.	1 1/4" - 3"

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ENGINEERS . . . large increase in stainless overlays

Design for a Reinforced Plastic Tank." The proposed construction includes a glass fiber reinforced plastic tank reinforced with metal cables to combine the corrosion resistance of the proper plastic with the high strength of the metal cables. In this way the reinforced plastic with a modulus of elasticity in tension of 900,000 psi is combined with the steel cable having an effective modulus of elasticity of 21,000,000 psi. The plastic, with 23 times the stretch of the steel cable, transmits the hoop stresses to the surrounding cables, which then carry the hoop stresses which would tend to bulge the tank walls to destruction. In field construction, the cable is wrapped tightly but without pre-stress around the plastic shell.

In order to carry the greater hydrostatic head as the pressure on the walls increases with tank depth, the cable is wrapped at closer intervals toward the bottom. The cable is bonded at intervals to the plastic shell, and cutting of the cable will not cause failure as the bonding holds and the adjacent strands then take up the load. Epoxy and polyester resin plastics with the proper corrosion resistant glass fiber can be used to resist the corrosive effect of most of the chemical solutions used in pulp and paper mills. The cable material can also be varied to include steel, stainless steel, or monel depending on the corrosive environment.

"Inspection of Weld Fabricated Alloy Clad Digesters" was presented by Charles Eldridge, Inspection and Consulting Service, Toronto, Canada.

This paper answers questions which the mill personnel frequently ask on "How do we go about purchasing equipment so we don't have failures due to defective materials, fabrication and welding?" The author has interpreted the various phases of inspection based on ASME Unfired Pressure Vessel Code Requirements. Good inspection may be useful in assuring the purchaser what he wants in so far as inspection can insure it.

The third item covered was an interim report on "Successes and Failures in Chlorine Dioxide Manufacturing and Bleach Systems" given by R. E. L. Wheless, Union Bag-Camp Paper Corp., Franklin, Va. This presentation was a preliminary to a questionnaire on the subject, prepared by the committee under Mr. Wheless and sent to the various mills.

The experience with materials has shown that there are places in the chlorine dioxide system where tita-

EDWARD W. HOPPER . . .

Noted specialist in corrosion problems, he headquarters in the Union Trust Building, Pittsburgh. He attended Columbia University and Pratt Institute and collaborated in developing the first electrolytic tin strip plating process. He has been consultant to West Virginia Pulp and Paper Co., J. F. Pritchard & Co. and others.



nium can be used to advantage as the best known material of construction where properly fabricated and welded. Stainless steels 316 and 317 are subject to attack, especially where scale, dirt, or pulp adhere to the surface. Buffering to increase the pH improves the life expectancy from the stainless. High molybdenum in the stainless is beneficial in reducing pit type attack.

Hastelloy C can be used in the system in certain locations. It should be furnished to the proper chemistry and in the properly annealed condition or its use may result in a waste of money. Homogenous lead-lined and glass-coated steel reactors have been used and both have had failures. Glass-coated piping has given good service. Ceramics have been used successfully in absorption towers, etc. Coatings of and glass fiber reinforced epoxy and polyester resin construction has been used to advantage in locations following the mixer and should be considered seriously for severely corrosive conditions but only after reviewing the specific conditions.

Alkaline digester corrosion and overlay was the old but important subject of the afternoon session. The first paper, by H. M. Canavan, Mutual Boiler and Machinery Insurance Co., Waltham, Mass. and Z. S. Blanchard, Chicago Bridge & Iron Co., Portland Me., was "Regional Studies of Digester Corrosion—Interim Report."

The authors had digested the mill reports on the subject for 1960 and determined that the average corrosion rates as reported had decreased. However, they feel that some of the decrease may be due to increased use of stainless steel overlay which would tend to reduce the average rate of attack. They believe that it would be well to exclude from the carbon steel averages all digesters which have complete overlay coverage.

The mill average corrosion rate was 23.0 mils per year on carbon steel,

4.7 mils per year on Inconel lined or clad, and 7.4 mils per year on stainless steel 316 and 347 lined or clad. The mill average corrosion rates in the critical area was 43.9 mils per year on carbon steel, 7.8 mils per year on the Inconel, and 14.0 mils per year on the stainless.

The report shows a large increase in the use of stainless steel overlay in carbon steel digesters. This method for increasing carbon steel digester life still seems to be most feasible.

The next paper, by P. C. Bobo, The Mead Corp. Kingsport, Tenn., and Zane Blanchard, Chicago Bridge & Iron Co., Portland, Me., described corrosion in carbon steel digesters in soda pulping service, steps taken to reduce attack, results of spray metalizing, and results with stainless steel overlay from early 1958 to the present.

The results tend to show that the stainless steel overlay is standing up well. Small areas may require periodic repair. Areas subject to liquor impingement in filling and circulating show evidence of attack on the overlay. The conditions responsible for causing impingement should be corrected by changes in piping to eliminate this washing action.

"Overlay Testing at Time of Application" was presented by Hugh Y. Reinhoff, Alloy Cladding Co., Baltimore, Md.

The author also described certain techniques which might be employed in non-destructive testing to establish accurate coating thicknesses. The desired instrument should operate and give results in the presence of varying amounts of ferrite in the overlay. He also recommended additional chemical checks to be run on chips taken from the overlay surfaces in addition to those taken by trepan.


"Recommended Procedures for Lining Pulp Digesters with Stainless Weld Metal Overlay," was the subject of a panel discussion, moder-



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ENGINEERS . . . corrosion

ated by R. C. Stamm, West Virginia Pulp and Paper Co., New York, with G. E. Linnert, Armco Steel Co., Baltimore, discussing proposed specifications; H. Y. Reinhoff, Alloy Cladding Co. Inc., Baltimore, speaking as an applicator; W. E. Henricks, The Mead Corp., Chillicothe, Ohio, speaking as a mill owner; and W. B. Parker, Hartford Steam Boiler Inspection and Insurance Co., Hartford, Conn., speaking for the insurance companies.

Mr. Linnert discussed the proposed "Recommended Procedures" and many of the details which are covered. This was the work of a group of mill and allied industry members and associates of the corrosion committee. It required a great deal of discussion and detailed review. It should be recognized as a guide both to mill management and applicator in setting up procedures and specifications for the respective job. Each mill could decide what they want and discuss it with the applicator, using this recommended procedure as a guide.

Mr. Reinhoff reviewed certain objections that he, as an applicator, would register against the present proposed "Recommended Procedures." These are largely based on how to test and evaluate test results and what one should do when areas not up to the standards set forth are found.

Mr. Henricks discussed the Mead results with stainless overlay starting with manual arc overlay which gave excellent but not perfect results to automatic overlay which did require considerable repair. Mr. Henricks emphasized the need for fast application to minimize down time and for good overlay life.

Mr. Parker examined overlay from the standpoint of digester safety. Among the points was the fact that no allowance is made for any additional strength factor due to the overlay application; in other words, operating pressure is based on thickness of the carbon steel only. He also mentioned that small areas, for instance about 8 in. in diameter, could be overlaid even though just about at the minimum allowable thickness. However, larger areas could not be built up in thickness by weld metal application in order to increase allowable working pressure.

Attendance and interest

at the sessions show that kraft digester corrosion and overlay is still an important problem to the kraft and soda pulp industry. However, the other phases of corrosion in the pulp and paper industry are receiving more interest among all committee members.

Greater emphasis is being placed on consideration of materials of construction and their proper utilization. This should include evaluation of the corrosion resistant properties of the materials and their limitations in the various mill environments. Particular attention should be placed on emphasizing the importance of securing material up to the required specifications seeing that it is properly fabricated, welded, joined or otherwise treated, and making sure that it is used properly and not abused.

Recommendations on materials of construction for mill applications should consider initial cost as well as ultimate cost based on the expected service life. The committee should attempt to keep up to date on the newer material and fabrication practices so that their varying properties can be used to advantage.

Another factor noted at the meeting was the great interest of all mill personnel in prevention of atmosphere and general corrosion in the mills. This includes the protection of structures, conveyors, tanks, machines, hoods, floors, stacks and other equipment. The committee plans to present papers and discussions on the use of paints and plastic films together with proper surface preparation in order to reduce this expensive item in mill operating costs.

It is quite evident that the corrosion committee will never run out of subjects for study and papers. However, the subjects for consideration should be those of greatest importance to the industry. The subjects for study should come from mill personnel who are acquainted with mill operations.

If mill managements ever visualize the tremendous costs of corrosion in an industry where almost every operation is subject to saturated moisture and corrosive attack, greater attention will be given to the value of a strong, working TAPPI corrosion committee.

The papers presented and the information developed can be of little value to the industry unless it reaches the attention of those individuals in the mills who will recognize its value and act upon it.

The true function of any corrosion committee should not be the study only of failures due to corrosion. The information gained should be employed in preventing similar failures in the future. Of still greater importance, however, is the knowledge gained and disseminated throughout the industry on materials of construction and their proper utilization. This information properly used would help to stop corrosion before it starts.



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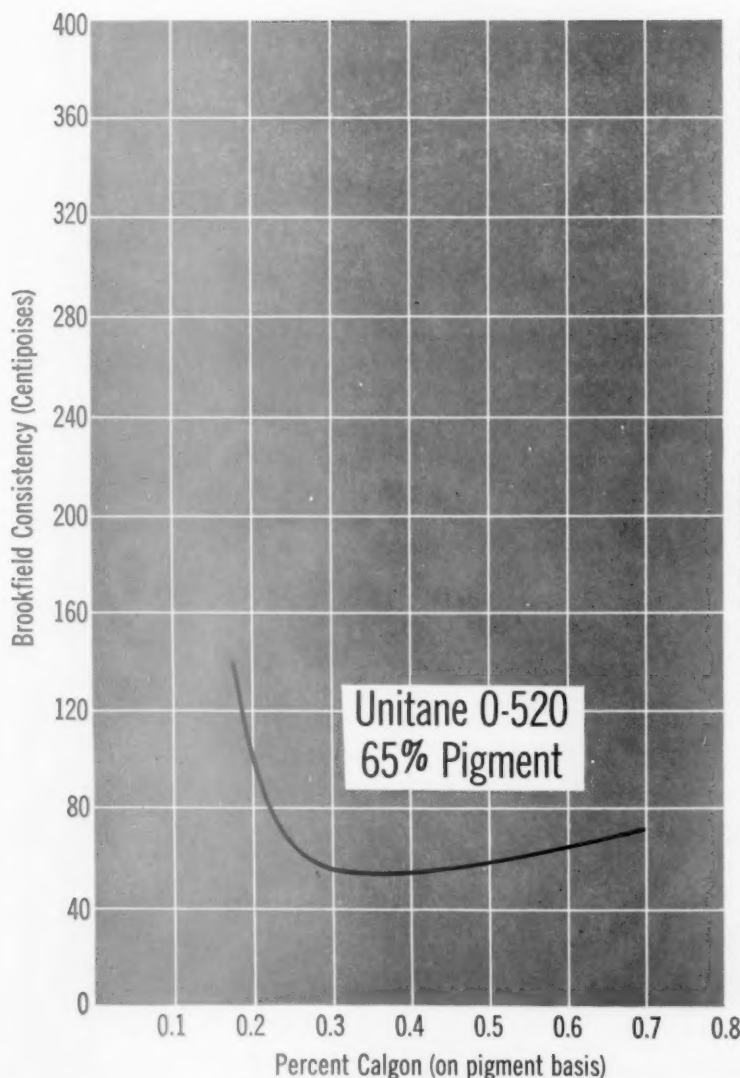
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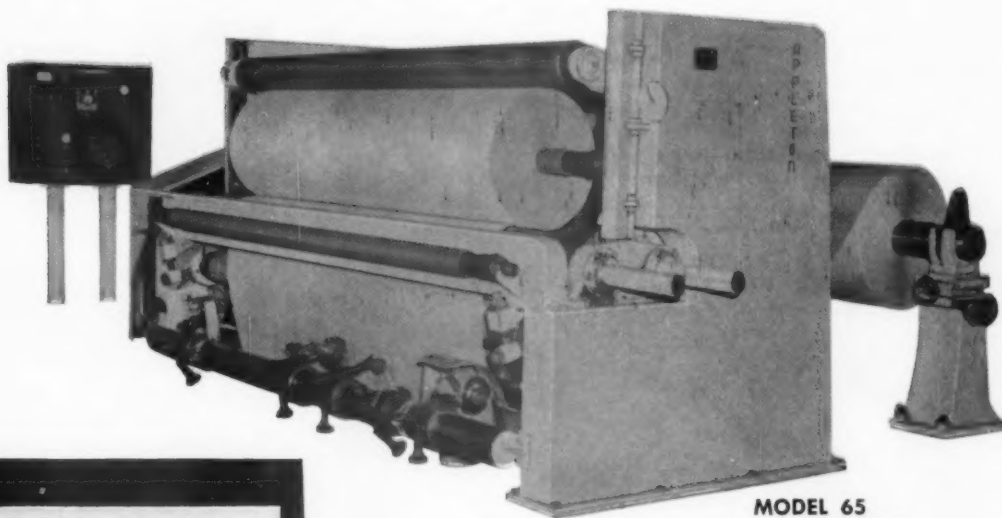
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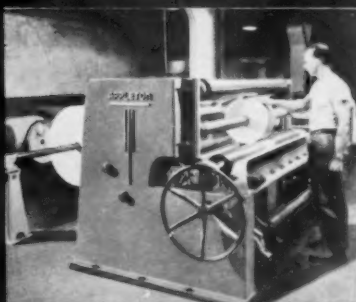
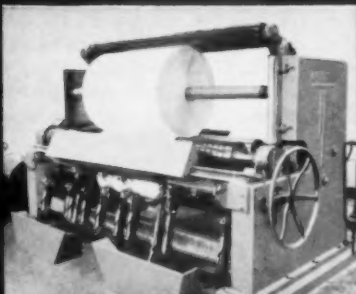
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STRICTLY PERSONAL...

... starts on page 35

Midwest

Clarence Kobishop now is asst. paper machine supt., and William Crueger now is paper machine tour foreman, Wisconsin River div., Consolidated Water Power & Paper Co., Stevens Point, Wis. . . . George R. White has been appointed controller, forest products div., Owens-Illinois Glass Co. Other appointments in the division's control and administrative dept. are Richard R. Beck, mgr., business

planning and analysis; William T. Kolva, personnel director; and Daniel Brochin, pricing coordinator.

Abe Lewenstein, vice president and technical director, The Appleton Coated Paper Co., Appleton, Wis., died Oct. 20. Mr. Lewenstein joined the company in 1926. . . . Arthur W. McLeod, Kimberly-Clark Corp., died Oct. 20. He retired in March as junior trades coordinator for the corporation. . . . John R. Kimberly, chairman of the board, K-C, Nee-

nah, Wis., was reelected to a one-year term on the National Industrial Conference Board. He is also a trustee of the conference board.



Robert J. Casey is now a Midwest sales representative for Southern Clays Inc., located at Wisconsin Dells, Wis. He shares this area with Charles Luginbuhl.

Donald G. Pryor has been named quality control supervisor, Biron division, Consolidated Water Power & Paper Co. He was process engineer in the division's technical dept. . . . Joseph H. Quell, foreman at the Appleton (Wis.) division of Consolidated for 33 years, has retired.

Elmer H. Jennings, former president and chairman of the board, Thilmany Pulp and Paper Co., was honored at a dinner Oct. 21 at Kaukauna, Wis., attended by 375 friends and relatives. Mr. Jennings was given a plaque for his community contributions.

Recent Laboratory Promotions At Appleton Coated Paper



Busch



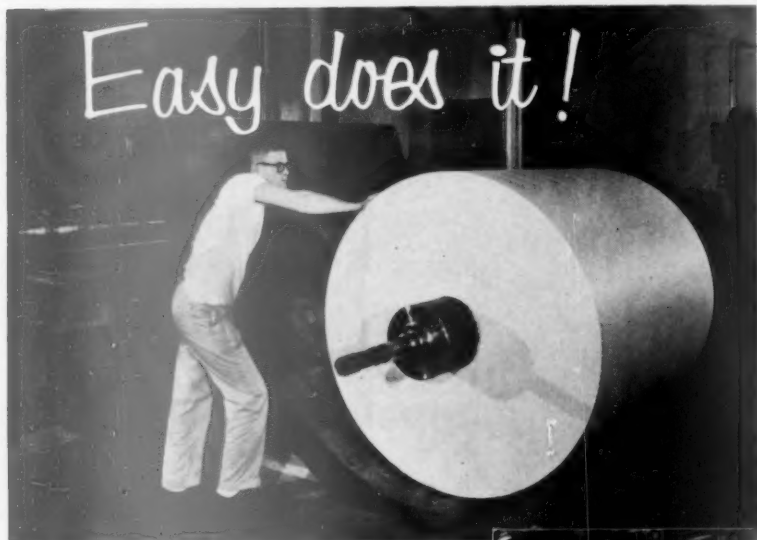
Page



Meyer

The Appleton Coated Paper Co., Appleton, Wisc., has promoted Thomas W. Busch to asst. technical director, William H. Page to product development section head, and Roland F. Meyer to quality control section head. The first and second posts are newly created; the third was created in May.

James C. Kimberly, father of John R. Kimberly, chairman of the board, Kimberly-Clark Corp., died Oct. 17 at his



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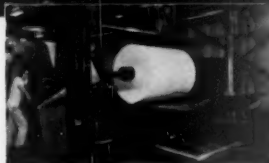
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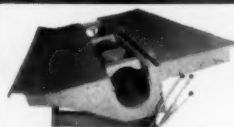
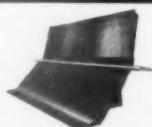
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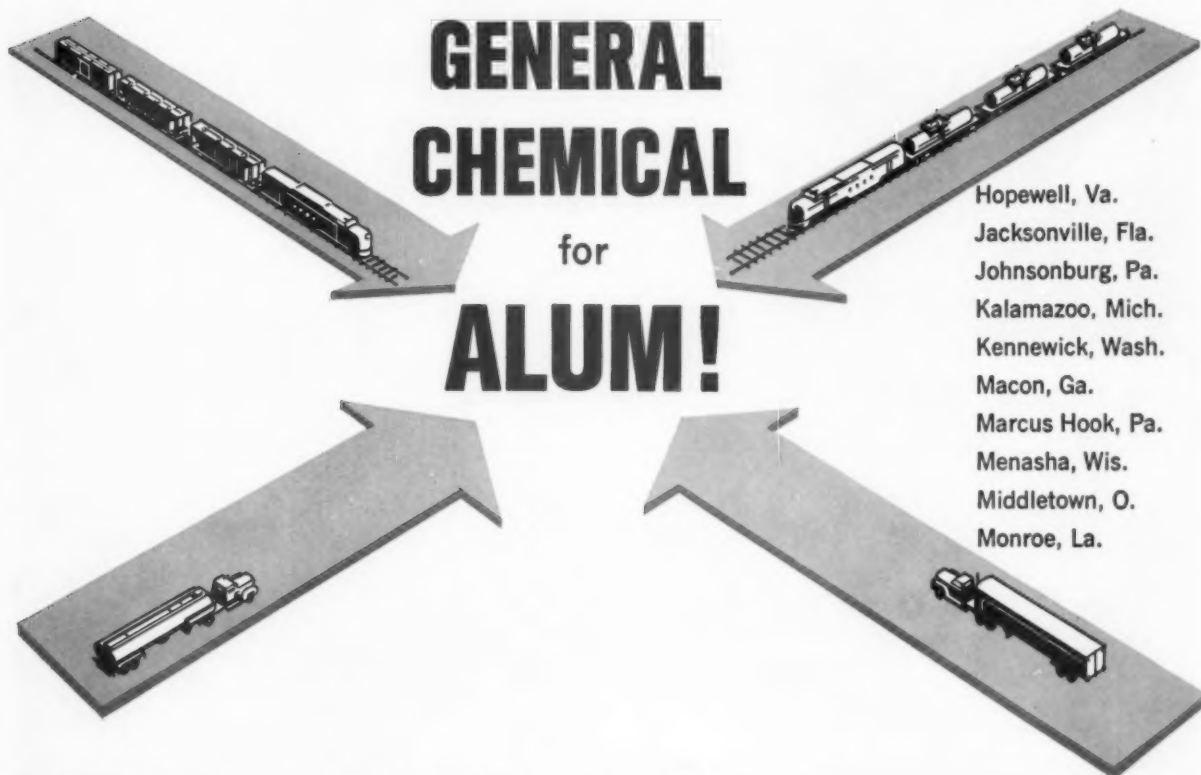
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Hopewell, Va.
Jacksonville, Fla.
Johnsonburg, Pa.
Kalamazoo, Mich.
Kennewick, Wash.
Macon, Ga.
Marcus Hook, Pa.
Menasha, Wis.
Middletown, O.
Monroe, La.

Look at the Southeast, for example. Here we have *nine plants* to meet your alum requirements with speed, efficiency . . . and certainty. Similar multi-source supply patterns exist in other major consuming areas. These interacting supply sources assure dependable delivery, where and when you want it . . . providing an extra measure of reliability in emergencies.

General Chemical *liquid* alum is notably pure, low in insolubles and iron. Our *dry* alum is exceptionally uniform in strength, free-flowing and readily soluble. For extra quality, extra dependability in alum, always call on General Chemical!

New Orleans, La.
Pine Bluff, Ark.
Port Arthur, Ont.*
Port St. Joe, Fla.
San Francisco (Port
Chicago) Calif.
Savannah, Ga.
Tacoma, Wash.
Thorold, Ontario*
Vancouver, Wash.
Wisconsin Rapids,
Wis.
Valleyfield, Quebec*



GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

*In Canada:
Allied Chemical Canada, Ltd.

STRICTLY PERSONAL . . .

home, Neenah, Wis. The son of one of the founders of the company, J. C. Kimberly was a vice president and director prior to retirement in 1954, after 54 years with the company. He donated funds for the construction and perpetual endowment of a library at the Institute of Paper Chemistry.

James Kuse has been named director of market development, Hodag Chemical Corp., Skokie, Ill. He was at the silicones division, Union Carbide Corp.

Canada

John W. Fries has been appointed head of the combined woodlands operations of Dominion Tar & Chemicals newsprint, containerboard, kraft and fine paper groups. His title is vice president and gen. woods mgr. **Weldon A. McCollm** is vice pres. and assistant gen. woods mgr.

Elliott M. Little, chairman of the board, Anglo-Canadian Pulp & Paper

Mills and Anglo-Newfoundland Development Co., has been elected president of the 300-member Canadian Exporters Assn., whose objective is to increase Canada's export business.

P. E. Roberts, executive vice president, Abitibi Power & Paper Co., has been elected to the board of directors. **W. H. Smith**, who resigned as vice pres. and director, has been elected an honorary director. Mr. Roberts was in charge of special projects for Abitibi, including the Alpena, Mich., development.

T. H. Birchall has been named general sales mgr., Provincial Paper, Ltd. **J. F. Clarkson** is domestic sales mgr.

Claude Gareau has been appointed mgr. employe relations for Singer Manufacturing Co. and its affiliates and subsidiaries in Canada. He has served previously as the company's personnel director at St. Johns, Que., and as industrial relations mgr., Thurso Pulp & Paper Co., a Singer affiliate.

B. M. Hoffmeister, former chairman of the board, MacMillan & Bloedel, and, latterly, agent-general in London for the British Columbia government, has been appointment a special trade commissioner for the province. . . . **J. E. Cottrelle** has been appointed a vice president, Abitibi



J. H. DUPASQUIER 560 E. Clarendon St.
Gladstone, Oregon

Improve Paper Quality

with

DUPASQUIER DRIPLESS STEAM SHOWER PIPE

- **WET END**—breaks up bubbles, disperses foam
- **DRY END**—increases sheet moisture, improves finish, lowers bulk and caliper
- **SAFELY USED** anywhere dripless steam desired

Custom Built for Any Machine

U.S. Pat. No. 2642314,
in Canada No. 509451

Write for Illustrated Folder

IT'S HARD TO HIT A MILL ANYWHERE WITHOUT DeZURIK REGULATORS!

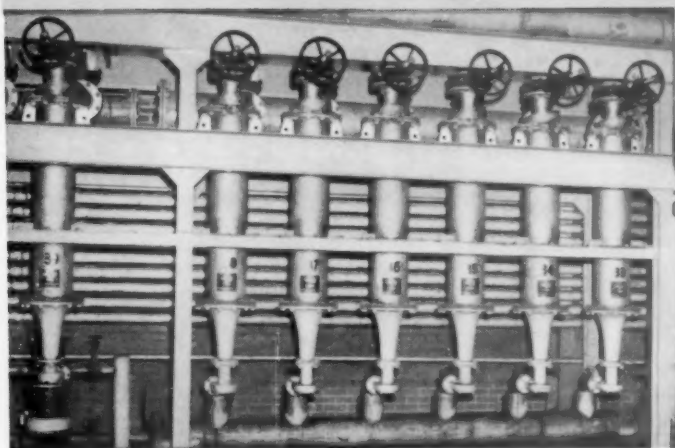
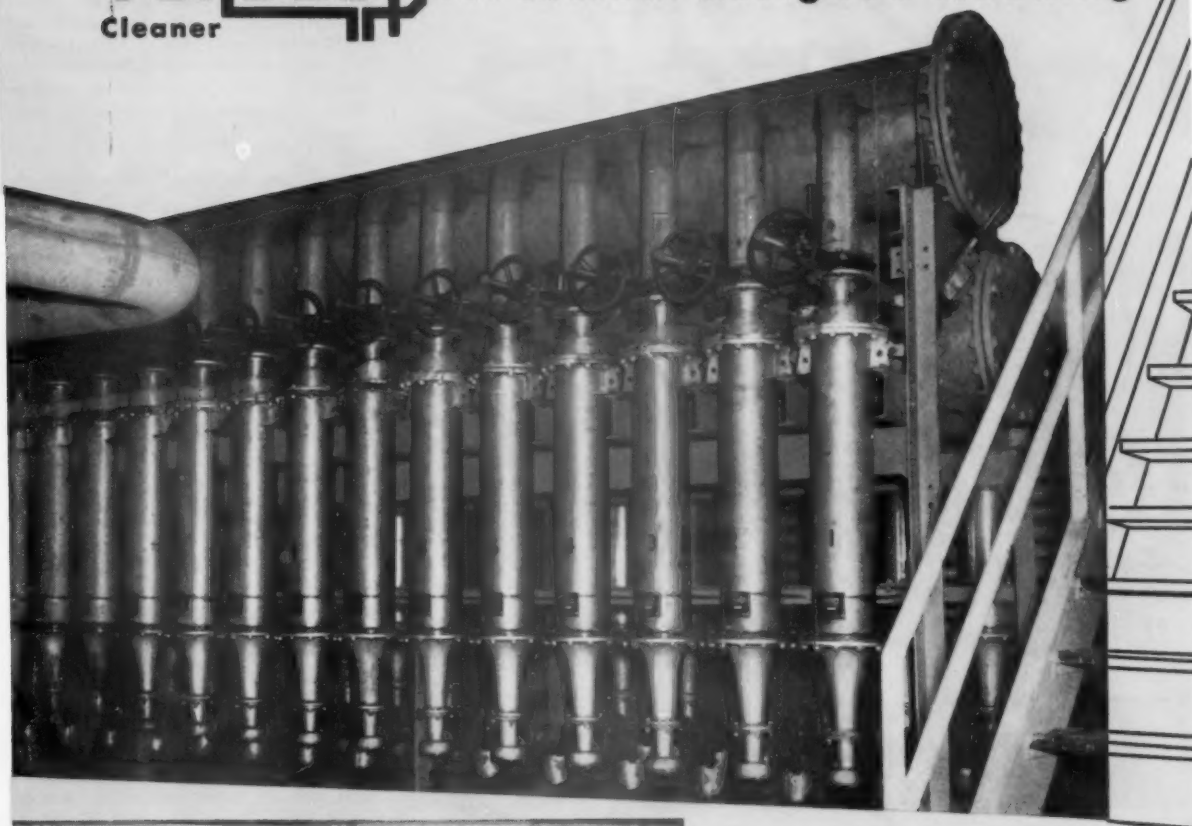
In hundreds of mills, thousands of DeZurik Consistency Regulators keep proving DeZurik's dominance and excellence in stock-consistency control. Today, backed by over 30 years of partnership with paper-makers everywhere, DeZurik engineers can and will recommend for any situation the exact regulation-installation which will positively assure the utmost in efficiency, accuracy, sensitivity, longevity. DeZURIK CORPORATION—Sartell, Minnesota; or DeZURIK OF CANADA LTD., Galt, Ontario.



NICHOLS FREEMAN

VORJECT
Cleaner

... custom designed cleaning



For economical and efficient stock cleaning no unit equals the Vorject. Shown on this page are some of the thirty-nine Nichols Freeman 610 Vorjects in the stock cleaning system of a large southern kraft mill. Vorjects were chosen for a cleaner stock, with low fibre loss, no insuction of air and high shive removal efficiency.

Let us engineer a stock cleaning system for your mill.

NICHOLS

Representatives:

Harold E. Ingalls Assoc.
N. Windham, Me.
Gulf States Specialty Co.
Mobile, Ala.

A. H. Lundberg, Inc.
Mercer Island, Wash.
L. Neil Brown
Chagrin Falls, Ohio

Nichols Engineering & Research Corp.
80 Pine St., New York 5, N. Y.

Indianapolis

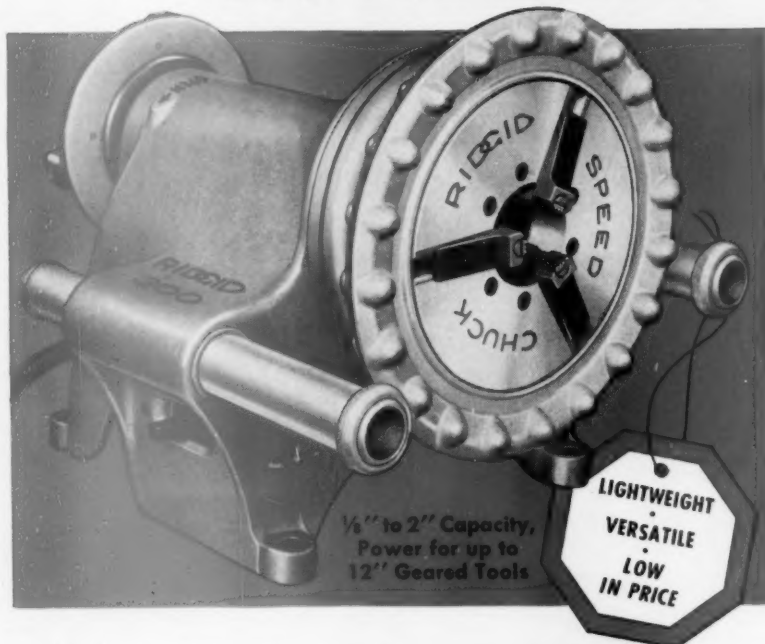
San Francisco

Montreal



**Easy-to-Move...Time-Saving
Power for Your Shop or
on the Job...New**

RIDGID® 300 Power Drive



Bench, stand or truck mounted, this compact **RIDGID 300 Power Drive** quickly pays for itself in time and labor savings. Speed chuck closes and releases by hand... holds tight forward or reverse. Cam-action rear workholder holds even long lengths straight for perfect threads and cuts every time.

Converts to Low-Cost Threading Machine

Add the **RIDGID** No. 310 Carriage, No. 360 Cutter and a **RIDGID** Quick-Opening Machine Die Head, and you're ready to cut, thread and ream. With a No. 19 Nipple Chuck you even cut and thread close nipples with threading machine speed and ease.



DRIVES GEARED THREADERS • THREADS CLOSE NIPPLES

Call your Distributor today. For your convenience, he maintains a complete stock of **RIDGID Work-Saver Pipe Tools and parts!**

RIDGID

The Ridge Tool Company, Elyria, Ohio, U.S.A.

Strictly Personal...

Power & Paper Co., Toronto, and G. M. Brain has been named vice president and gen. mgr. Abitibi Sales Co. . . . **John Ashby**, executive vice president Westminster Paper Co., has returned to the coast after three years in Montreal and will make his home in Vancouver, continuing to direct operations at Crabtree Mills in Quebec, as well as at New Westminster, B.C.

Lowell Besley, chairman, woodlands section, Pulp & Paper Research Institute of Canada, has been elected president of the Canadian Institute of Forestry. He was formerly dean of forestry, University of B. C.

Dr. Robert D. Duncan is the new mill manager for Anglo-Newfoundland Development Co., succeeding **Robert Brown**, soon to retire after serving the company for more than 50 years. Dr. Duncan was formerly with Canadian International Paper Co.

F. E. Murray, formerly with B.C. Research Council in Vancouver, has been appointed research coordinator at Consolidated Paper Corp., Grand Mere, Que., and **Dr. O. J. Walker**, recently technical director, Anglo-Canadian Pulp & Paper Mills, has been named development coordinator, with **W. T. Houghton** and **J. L. Barlow** as research engineers.

Bruce Howe has been appointed technical assistant paper mill supt., Quebec North Shore Paper Co., Baie Comeau, Que. **John Lambert** is assistant control supt. there.

Pacific

Allen E. Carl has been promoted to new post of application engineer for Morden Machines Co. He has been in West Coast sales and will now coordinate all sales and service.



Carl A. Schmidt, Jr. has been named plant manager of Weyerhaeuser Co.'s Cedar Rapids shipping container plant. He had recently been plant supt. of the Hoerner Boxes Inc. plant at Tupelo, Miss.

William L. Bush, formerly with Standard Oil Co. of California, has joined Weyerhaeuser Co., Tacoma, as director of transportation. He replaces **George Shafer**, recently retired as gen. traffic mgr.

AGGLOMERATION IN PARAFFIN WAX PAPER SIZING

...STOPPED BY A-C POLYETHYLENE!

Recent lab studies show that A-C® Polyethylene in paraffin wax sizings *improves the particle size of the emulsion*. It stops agglomeration by raising the softening point of paraffin. And it gives the emulsion greater mechanical stability.

Now you can have superior sizings for all types of papers, from writing to wrapping. A-C Polyethylene not only keeps emulsion particles properly dispersed—

it contributes gloss, toughness, and resistance to water and chemicals.

You'll find A-C Polyethylene easy to incorporate into your regular emulsifying procedure. Or you can ask your supplier for emulsions containing A-C Polyethylene.

For technical data, write: Plastics Division, Dept. 613-PP, 40 Rector Street, New York 6, N. Y. In Canada: Allied Chemical Canada, Ltd., Montreal.

PLASTICS DIVISION
40 Rector Street, New York 6, New York



BASIC TO AMERICA'S PROGRESS

STRICTLY PERSONAL...

South

Herbert A. Kidd, 66, one of the more colorful personalities of this industry and Vice President and General Manager of the Georgia Kraft Company at Macon and Rome, Georgia, since it was founded, died at noon Sunday, October 15, 1961, at Emory University Hospital, Atlanta, where he had been a patient for several weeks.

Mr. Kidd, born in Leven, Fife, Scotland, and educated at Heriot Watt College, Edinburgh, and Glasgow University, came to the United States in 1929 and joined The Mead Corp. of Dayton, Ohio, the same year.

His 31-year career with Mead included many important assignments in paperboard research, mill management, and construction supervision. In 1951 he was elected a Vice President of the Corporation.

The efficient and successful kraft mills of Georgia Kraft Co. at Macon and Rome were built and operated under his guidance.

Upon retirement as a Mead officer in April, 1960, Mr. Kidd continued as operating head for Georgia Kraft to oversee the major expansion of the Rome mill, which has just been completed.



Rodney Woods has been appointed Southern rep., Morey Paper Mill Supply Co., Fitchburg, Mass. Mr. Woods will handle several of the company's products, including screens and decks.

Suppliers

New Engineering Consultant Service Headed by Cirrito

Anthony J. Cirrito and Associates is the name of a new consulting firm which has established offices in Grafton, Mass. (Phone: VE 9-3957).

Mr. Cirrito, a graduate in mechanical engineering at Villanova, 1939, followed by postgraduate work at Johns Hopkins, Pennsylvania and Worcester (Mass.)



Polytechnic Institute, is director of the new firm.

For the past seven years, he was a Rice Barton Corp. vice president with research and development responsibilities, including the establishment of the half million dollar Blandin Paper Co.-Rice Barton pilot plant venture for developing papermaking machinery and products.

He was development engineer for Lukens Steel Co. from 1946 to 1954 and prior to that was with Drever Co. and Glen L. Martin Co. in engineering work.

He and his associates offer services in product development, process engineering, drying and coating, machine dynamics and other paper technology fields. Drying, web formation and drainage are mentioned as specialties.

Frank Ware has been promoted to paper mill representative of Penick & Ford, Ltd., Corn Refining Div. He will cover Chicago, Wisconsin and Upper Peninsula of Michigan.



R. E. Goodwill has been appointed sales mgr., Norwood (Ohio) Works, electrical dept., Allis-Chalmers Mfg. Co. He

Clark-Aiken GSR 46" unit is

FORBES LITHOGRAPH MFG. CO.



FORBES LITHOGRAPH MFG. CO.
1000 N. 10TH ST., ST. LOUIS, MO. 63103

P. O. BOX 110, EASTON, MASS.

Mr. J. C. Hart, President
The Clark-Aiken Co. Inc.
Lee, Massachusetts

Dear Mr. Hart:

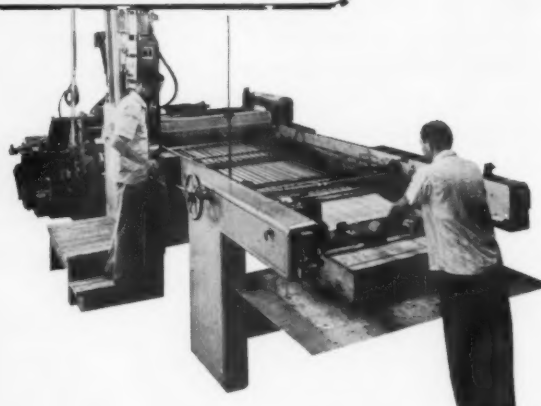
As you know, we have one of your new 46 inch GSR Outlets. We use it for cutting and slitting in the same operation on printed materials and I am pleased to be able to tell you that it is working very well. It has been in use for several months and has been very reliable. I am also pleased to tell you that the machine is very easy to operate and that it has been very reliable in use. I am also pleased to tell you that the machine is very easy to operate and that it has been very reliable in use.

I hope this letter pleases you and that you are satisfied with our service. Should there be additional information you would like, please feel free to write me.

Sincerely,

FORBES LITHOGRAPH MFG. CO.
J. C. Hart, President
A. C. Sullivan, Plant Engineer

"Minimum set-up time and accuracy have made this machine* one of the most talked of in the plant."



replaces **J. F. Fenske** who now is mgr., motor sales, Pacific Region. . . . **Emerson M. Hoyt** has been named staff asst. to the director of engineering, TRW Computers Co., Canoga Park, Calif. He was with systems division, Bendix Corp. . . .

Douglas P. Newcombe has joined the Manchester Machine Co. as regional manager, sales engineering, North Central States. He had been with Crocker, Burbank and Orton Corp.



James A. Gibbons has joined Frank W. Egan Co. as sales engineer for extrusion-coating equipment. He had been a technical representative for Union Carbide in Texas.

Lawrence R. Greenhaus has been named vice president, marketing, and a director of Fischer & Porter Co., Warminster, Pa. He has been sales mgr. of the company since 1960.



Sigler

John L. Sigler has been named vice president, sales and service, and **Katherine A. Fralick** has been named secretary, Morden Machines Co., Portland, Ore. Mr. Sigler was director of sales and services. Miss Fralick will continue to serve as office mgr. and administrative assistant to the president of the company.



Fralick

William D. Black now is domestic sales mgr., and **Walter A. St. Clair** is field sales mgr., domestic industrial truck division, Hyster Co., Portland, Ore.



Eugene Sanford Towery Jr. has joined CIBA Co., as a technical service dept. chemist. He was with Putnam Chemical Co., and Arnold Hoffman & Co.

Samuel Efron has been appointed executive vice president, Parsons & Whittemore, Inc. As partner in the law firm, Surrey, Karasik, Gould and Efron, he has served since 1954 as counsel to P&W.



Eric B. Norman has been named gen. sales mgr., H. W. Butterworth & Sons Co., Bethayres, Pa. He was with B. F. Perkins & Son Inc., Holyoke, Mass.



Horton

Schachte

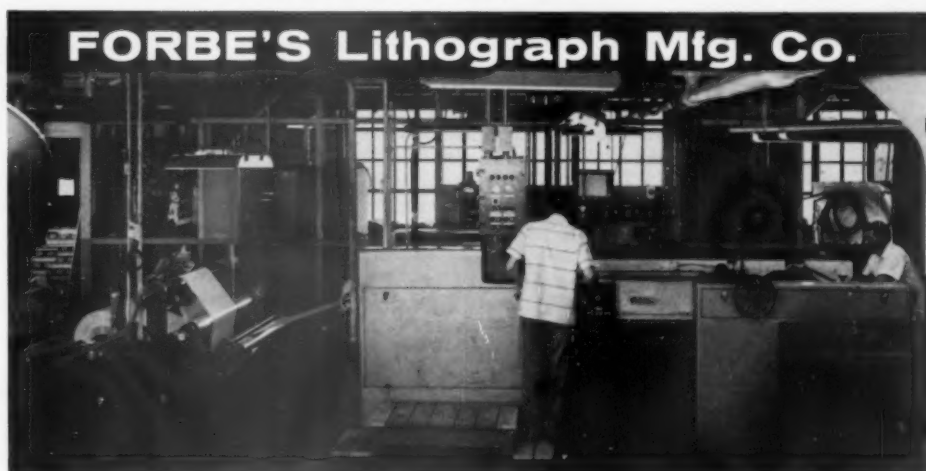
Bradley

Harry M. Horton has been named sales manager for the Link-Belt Co. Philadelphia plant. He succeeds **James H. Oakes**, who died recently after 33 years with the company. **Alfred B. Schachte, Jr.** steps up as assistant sales manager and **John J. Bradley** succeeds Mr. Horton as district manager at Summit, N.J.

slitting and sheeting in the same operation on printed materials at...



Versatility is one of the big features of all Clark-Aiken "G" Type Cutters. You'll find them doing all kinds of operations in paper mills, converters, printing plants, etc. Because of their adaptability, they are ideal for the high-speed, accurate register sheeting required for printed materials, as a separate unit or integrated with printing equipment, such as web offset, flexographic, letterpress and gravure. And for finishing rooms, they fulfill the day-by-day need for short-run or special sheeting without time loss of production-line cutters. Take time now to investigate their money-saving possibilities for your plant.



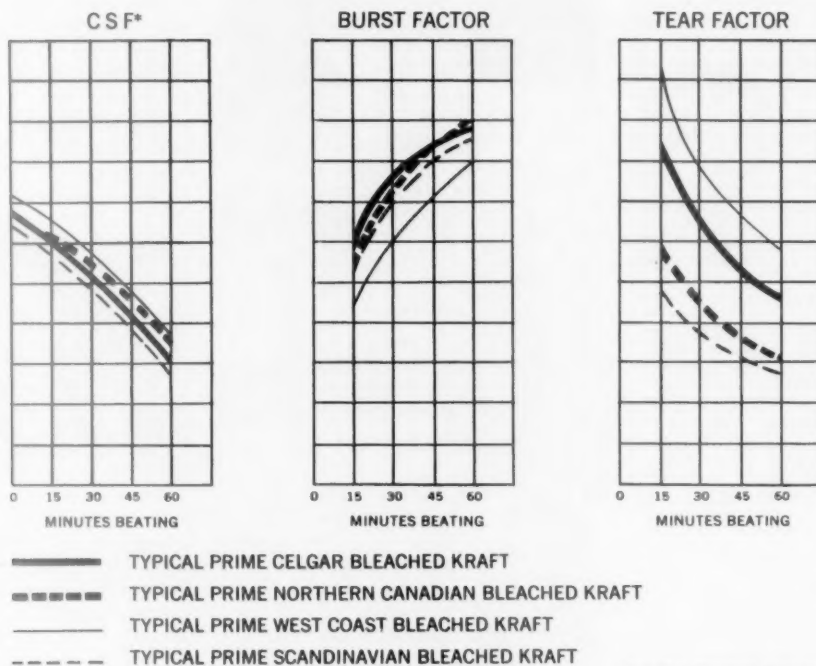
for more information write to . . .

THE Clark-Aiken COMPANY
957 Springfield Road, LEE, MASSACHUSETTS

CANADIAN REPRESENTATIVE: GORDON W. KEATES, 133 FLORA DRIVE, SCARBOROUGH, ONTARIO

CELGAR KRAFT HAS BALANCED PROPERTIES

STRENGTH VALUES



As shown by the above graphs, Celgar Kraft compares favourably with the world's best prime bleached kraft pulps in standard pulp tests.

In the all-important beating time to required papermaking freeness, it develops faster than other typical Canadian bleached kraft pulps, comparing favourably with the fast-beating Scandinavian furnish. This feature means high-volume output from repulping equipment at reduced power cost.

The bursting resistance of prime bleached Celgar Kraft exceeds or compares favourably with the best of its competitors while it is excelled only by West Coast bleached krafts in tearing resistance.

This unique and outstanding balance of properties at a high level can be achieved because of the Interior grown tree species used, the climatic conditions under which they grow and the modern process equipment installed in the new Celgar mill. These pulping characteristics, coupled with low beating time and good printability, place Celgar Kraft among the best bleached kraft pulps available in the world.

Distributors and agents for:

Celgar Kraft Pulps and Columbia Cellulose Viscose, Acetate and hardwood and softwood specialty sulphite paper pulps.

Canada and United States (kraft and sulphite pulps)

Columbia Pulp Sales Limited,
1600 Dorchester Street West,
Montreal 25, P.Q.

France

(kraft and sulphite pulps)

Ekman & Cie,
36 Bd. Haussmann,
Paris 9, France.

England

(kraft and sulphite pulps)

Columbia Pulp Sales Limited,
49 Old Bond Street,
London, S.W. 1.

Italy

(kraft pulps)

Rappresentanza Ekman,
Cellulose Tvedesi,
Via Manzoni,
Milan, Italy.

Germany

(kraft and sulphite pulps)

Canadian Forest Products
GmbH,
Königsstrasse 10B,
Stuttgart N, Germany.

Italy

(sulphite pulps)

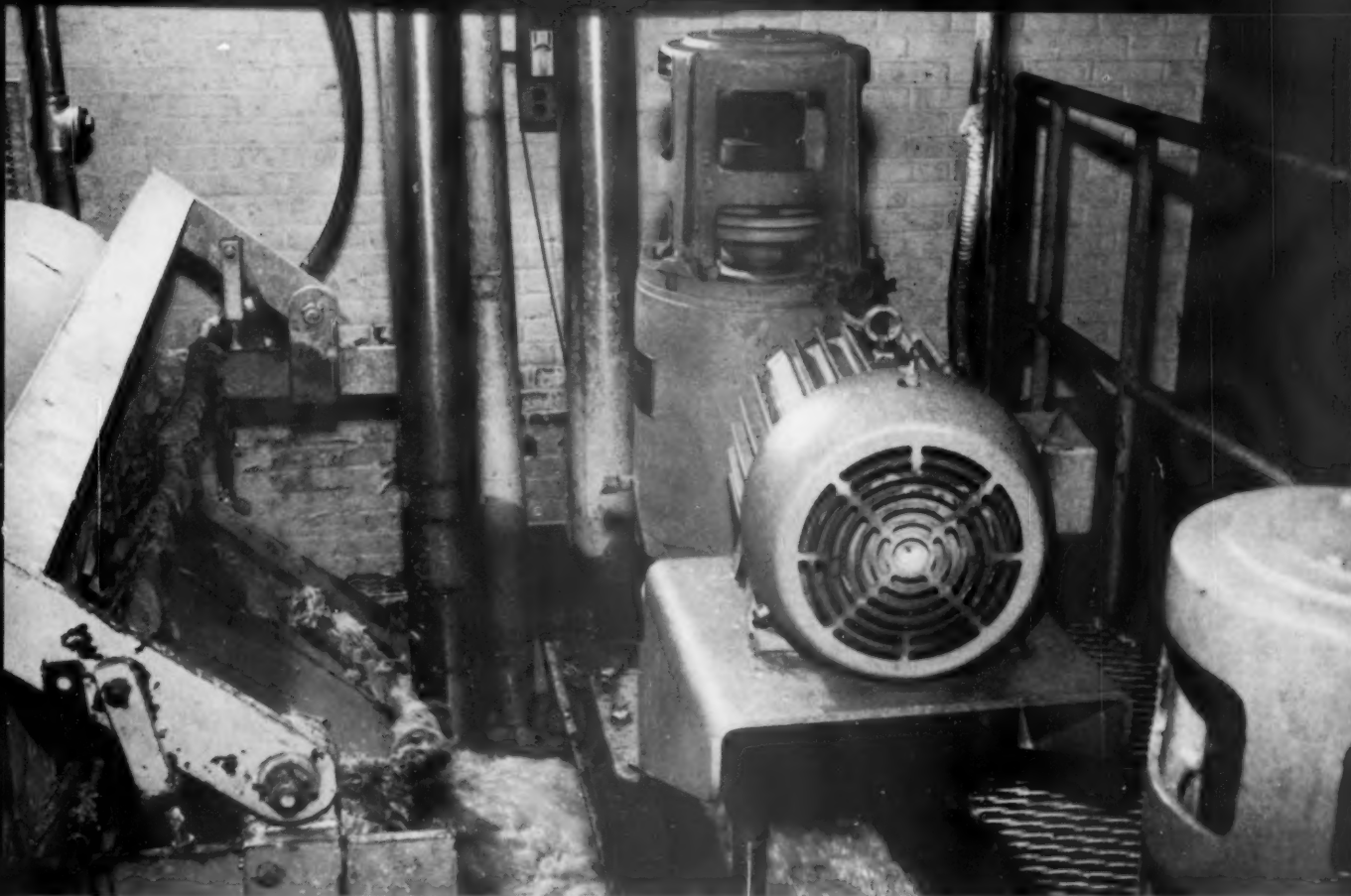
W. Pauly & Co.,
Via Vittor Pisani, 5,
Milan 508, Italy.

For information regarding other overseas agents please direct request to:
1600 Dorchester Street West, Montreal 25, P.Q.



COLUMBIA PULP SALES LIMITED

V6834-1



Controlled turbulence created by LIGHTNIN Stock Agitator rapidly separates stock fibers at Gould Paper Co., Lyons Falls, N. Y.

How to make stock uniformity toe the mark

This repulping system gives the mill a tight rein on stock consistency and pH.

Here you see step one. Hardwood stock at a soggy 12% consistency drops from the washers into both ends of a 32-foot-long dilution chest. The tiled chest is 4 feet wide and carries a 4-foot stock level.

Incoming stock meets a stream of acid water recycled from the secondary washer. In each 6-foot-long end section of the chest, the turbine on a 15-hp LIGHTNIN Stock Agitator drives stock and water in a powerful mixing flow.

With this kind of agitation, fiber

length and freeness are essentially unchanged. Controlled turbulence does the work of separating the fibers.

Consistency anywhere in this part of the chest stays within 0.1% (bone dry) of the average. Retention time is four minutes.

Rapid pH control Next, uniform stock tumbles over a weir into the 20-foot-long center zone of the chest. Here two more LIGHTNIN Agitators rapidly disperse strong sulfuric acid to bring pH to 2.5 and hold it there as stock discharges to the secondary washer. Uniform consistency and acid-

ity are provided at all conditions up to the design maximum of 4.0% (b.d.).

This MixCO-designed system was delivered to the mill just five weeks after the day it was ordered. It is only one example of the precision control you can bring into your pulping and paper-making operations with LIGHTNIN Agitators in your chests.

To find out more about this kind of mixing and the guaranteed results it gives you, call in your LIGHTNIN representative now. His name is in Thomas' Register and in the yellow pages of your phone directory. Or write us.

MIXING EQUIPMENT Co., Inc., 141-m Mt. Read Blvd., Rochester 3, N. Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

In Europe: Lightnin Mixers, Ltd., Poynton, Cheshire, England

Lightnin Mixers

MIXCO fluid mixing specialists

Dilution chest has repulp sections at ends, pH-control section in center. Installation adapts easily to changes in mill requirements.



NEW EQUIPMENT . . .

starts on p. 29 . . . chlorinated poly-ether, a chemically inert thermoplastic, which protects piping up to 250 F and above. Supplier says the cladding has good mechanical stability and wear resistance. In manufacture, pipe is heated and dipped into liquid poly-ether for firmly bonded continuously coated surface. Available in 10 ft. lengths in 1½ in. to 24 in. diameters. Schedule 40 wall thickness is clad inside and outside with an .025 in. to .035 in. protective film. Various fittings, other equipment and custom jobs available.

Supplier: The Polymer Corp., 2120 Fairmont Ave., Reading, Pa.

Break detector

. . . Prevents drying overheating

Application: Prevents overheating of paper machine dryers during breaks in paper.

Features: Automatic Shift-Break detector uses a photo-electric eye aimed at sheet passing over the dryers. When a break occurs, steam flow into dryers is automatically reduced to a preset level, as control shifts from "automatic" to "pressure." Constant

pressure is maintained until sheet is brought back over the machine. Then, control is automatically returned to its former "automatic" status and normal steam flow is resumed.

Supplier: Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis 8, Ind.

Industrial safety hats

. . . are injection moulded



Applications: For head protection where needed at mill.

Advantages: Hats are moulded of

polycarbonate, described by the supplier as one of the newest of the high impact engineering thermoplastics. This use of the plastic is the first in safety hats. The supplier says the hat is virtually indestructible and is the result of three years' research. Uni-ridge construction adds strength and reduces possibility of forces being "trapped" as in multi-ridge design. Hat retains flexural strength at temperatures from 100 F to 270 F. Interior of hat has double-cradle suspension. Hat comes in nine moulded-in colors.

Supplier: Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh, Pa.

Transducer gives signal

. . . of output electrically

Applications: To measure moving weight on conveyor belt by electric signal.

Advantages: A signal, in direct proportion to rate and speed of a moving weight, can be fed into a computer system to control other processes, or to control the conveyor itself through a closed loop system. The rate transducer can be installed on the supplier's Weightometer. This converts



Incorporating all of the advantages of the famous single-unit Carthage Splitter, this new unit means a smaller, less expensive foundation, practical installation in crowded woodyards, and simpler protection against weather with only the control unit under cover. Sizes for logs to 38" diameter and 9' length. Heavy-duty construction with pushbutton controls interlocked to assure safe, positive operation.

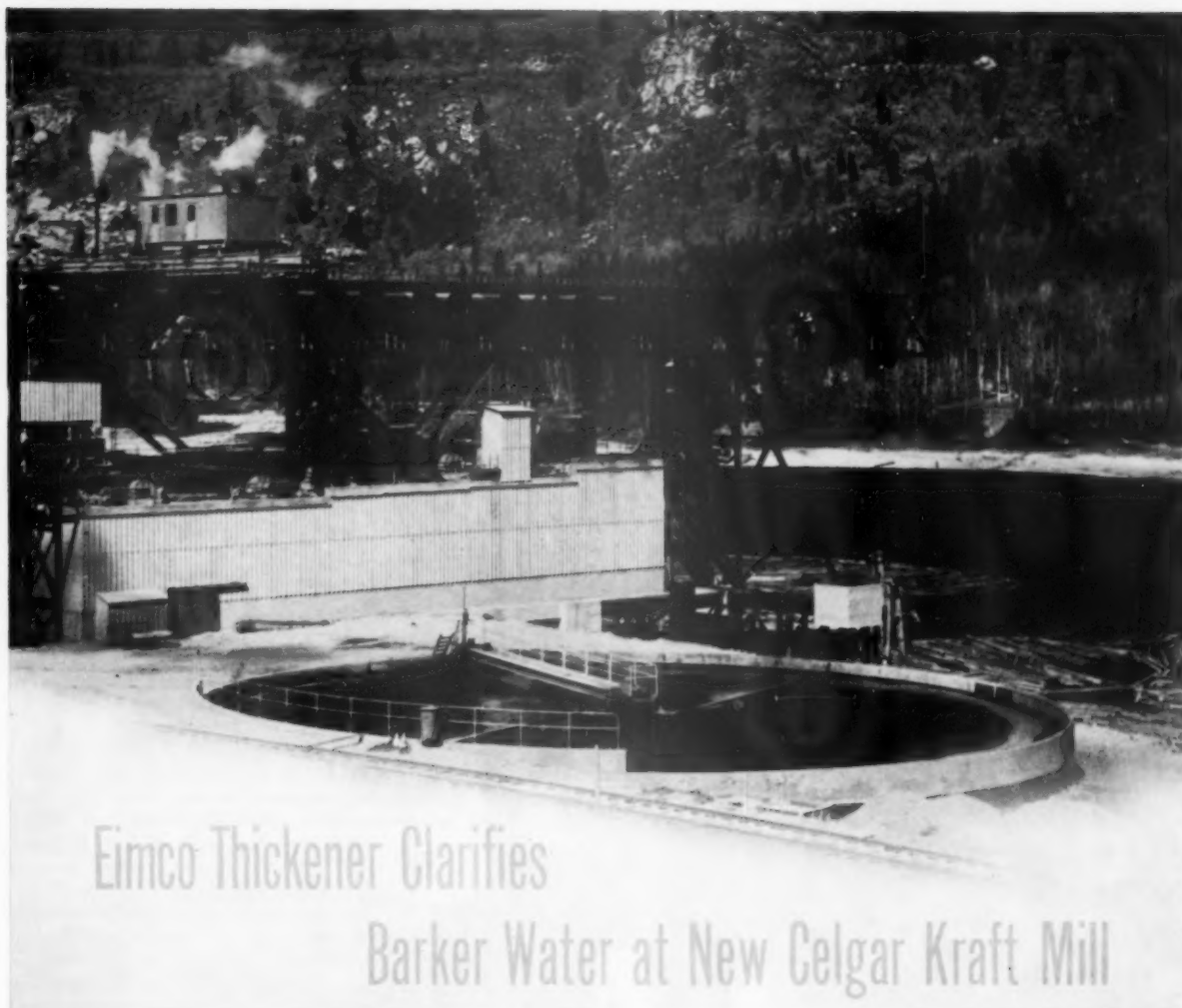
CARTHAGE MACHINE CO.
CARTHAGE, NEW YORK

New! **CARTHAGE Remote-Powered HYDRAULIC LOG SPLITTER**

Quarters Logs with ONE Stroke!

Write for Details





Eimco Thickener Clarifies Barker Water at New Celgar Kraft Mill

When Celgar, Limited, Castlegar, B.C., planned their new kraft mill, recently put into operation, they chose a modern 100-ft Eimco-Process Type C thickener for removing bark, sand, float material and chips from 4000 gpm hydraulic de-barker water.

The Eimco thickener is a steel center column supported unit with double skimmer. For convenience, feed enters at the bottom of the 24-ft center column. Underflow solids are dewatered on an Eimco 6-ft diameter by 7 disc filter; overflow goes to the Columbia River; float is burned.

In engineering this industrial type clarifying thickener for economical barker water clarification, Eimco engineers worked closely with engineers of H. A. Simons, Ltd., Vancouver, B.C., consulting engineers for the Celgar pulp mill.

The Eimco representative in your area can provide facts about Eimco equipment that has proved profitable for pulp and paper producers—equipment for wastes and water treatment . . . pulp washing . . . filtration . . . recausticizing. Contact him, and write for Thickener Bulletin PL-1004.

The Eimco Corporation, Box 300, Salt Lake City, Utah.



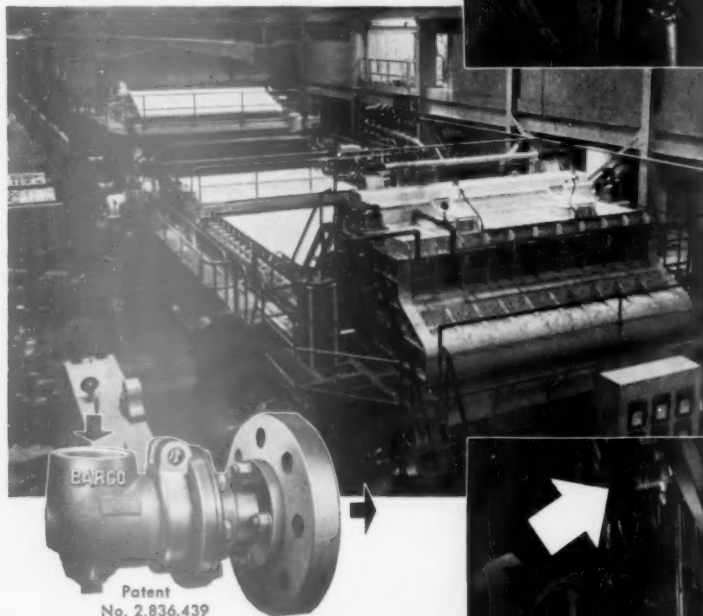
B-843

BARCO Rotary Joint Performance Pays Dividends!

IN CANADA—

100% BARCO EQUIPPED! These photos show new paper machine* in Howard Smith Paper Mills Ltd. (a subsidiary of Dominion Tar & Chemical Company, Limited) Cornwall, Ontario, Canada, and some of the 64 Barco 3" Type C Rotary Joints installed on 60" dryer rolls. Service: 300° F, 75 psi, 95 R.P.M. Installation: Rated excellent — no visible run-out of joints. Record: Very satisfactory. (Same mill is now changing over to Barco Joints for an older machine.)

* Paper Machine Builder: Dominion Engineering Company, Montreal.



Resists Seal Ring Breakage—In Barco joints, the spherical seal ring is under *compressive, not tensile*, loading. Self-adjusting for wear. Seal withstands shock loads and alternating hot and cold service.

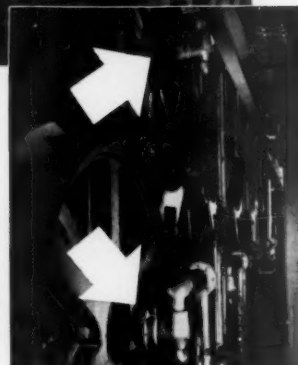
Corrosion Resistance—Kanigen coating for sleeve and rotating surfaces. Stainless steel spring and guides.

Wide Spaced Bearings—Light running; resist wear; hold concentricity. No lubrication required.

For Every Purpose—BARCO is HEADQUARTERS for Rotary Joints! Type C: Threaded, ½" to 3"; syphon or single flow. Type CR: For rotating syphon. Type CF: For flanged end connection. Type CC: Heavy duty for shock loads.

BARCO MANUFACTURING CO.
573M Hough Street • Barrington, Illinois

The Only Truly Complete Line of Flexible Ball, Swivel, Swing and Rotary Joints
In Canada: The Holden Co., Ltd., Montreal



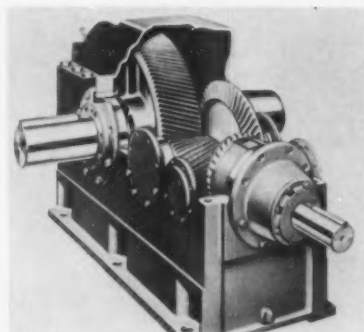
**ASK
FOR
CATALOG 310.**



... NEW EQUIPMENT

the mechanical operation of this device into an electrical impulse or frequency output by means of a pulser wheel and proximity coil pick-up. Absence of mechanical or magnetic connectors disallows interference with weighing operation, the supplier says. Supplier: Merrick Scale Mfg. Co., 180 Autumn St., Passaic, N.J.

Horizontal speed reducers ... have wide torque range



Applications: When 9,000 to 1,570,000 lb.-in. torque ranges are needed.

Advantages: Parallel shaft type has ratios of 1.84 through 292 to 1. Right angle type has ratios of 5.06 through 1207 to 1. Capacity ranges greater than those above are available in custom units. Regular units come in 22 standard sizes. Double ended gear shafts can be rotated 180° for longer life. Housings have flat surface for mounting motor brackets, backstops, brakes and other modifications.

Supplier: The Falk Corp., P.O. 142, Milwaukee 1, Wis.

Portable radiometer ... for untouchable surfaces



Applications: For measuring temperatures of surfaces that can't be handled.

Advantages: Radiometer determines temperature variations as small as 1/20 F in moving or otherwise untouchable surfaces. Optical sensing head collects infrared energy emitted

LET WILLIAMS BUILD YOUR WOOD GRAPPLES!

Broad experience in building all kinds of grapples for the paper industry means Williams can design the exact type of grapple to meet your requirements.

Let our engineers discuss your needs with you.



Over 50 years—quality grapples, clamshell and dragline buckets



WILLIAMS BUCKET DIVISION

THE WELLMAN ENGINEERING CO.

113 St. Clair Ave., N.E., Cleveland 14, Ohio

HANCHETT KNIFE GRINDERS

MODEL
AK
AUTOMATIC

EXTRA
HEAVY DUTY
Traveling
Wheel Type

Capacity—
84" to 396"

Motors—
7½ to 40 HP
Speeds—10' to 100'

and faster
TRANSMISSION DRIVES
Mechanical—Constant Speed
Hydraulic—Variable Speeds

WHEELS
Cylinder or Segmental Types
16 — 20 — 24" Diameter

We Guarantee our Machines to
Deliver the Maximum in Precision
Ground Knives per Hour with
the Finest and Sharpest Edges
for Longer and Better
Cutting Action

TABLE DRIVES
Mechanical
Hydraulic
Electrical



FOR CHIPPER—HOG—PAPER—VENEER
KNIVES—ROTARY CUTTERS—DOCTOR
BLADES—SHEAR BLADES, ETC

1. Guaranteed Construction
2. Finest Materials
3. Advanced Design
4. Quiet, Smooth Running and Entirely
5. Free of Shock or Vibration

GUARANTEED PERFORMANCE
REAL WORK HORSES

MODEL
GK
AUTOMATIC

HEAVY DUTY
Traveling Table Type

Capacity — 32" to 196"
Motors — 5 - 7½ - 10 - 15 HP
Table Speeds — Hydraulic (10' to 80' per min.); Mechanical (Constant)

Gears — Hardened
Bearings — Ball and Roller Types
OTHER MODELS

MODEL "DN" — For normal knife requirements — Sizes — 32" to 108"; Motors — 3 - 5 HP; Wheels — 10" to 14" Diameter — also Straight Wheel and Circular Knife Grinders

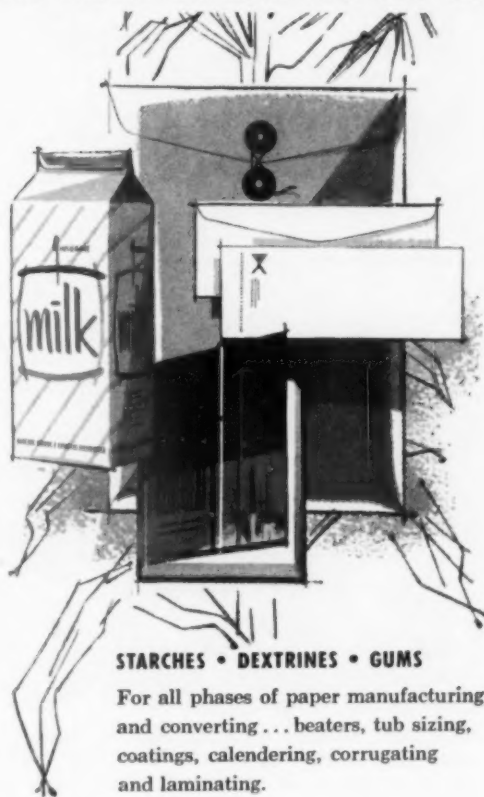
HANCHETT MANUFACTURING COMPANY

Main Plant
BIG RAPIDS, MICHIGAN

West Coast
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Look what happened to
the corn we took off the cob



STARCHES • DEXTRINES • GUMS

For all phases of paper manufacturing
and converting . . . beaters, tub sizing,
coatings, calendering, corrugating
and laminating.



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Tidland **RELIABLE REELS**

Pneumatic or Hydraulic
Semi- or Fully-Automatic
Fully Adjustable Nip Pressure
Replaceable Ways
Box Steel Frame with Enclosed
Quadrant Gears
Oscillating Doctor

Accessories include
Reel Spool Starter,
Backtender Ropes,
Spreader Rolls (any type)

CUSTOM MADE... ANY SIZE
Center Wind Attachment Available

*Write
for complete
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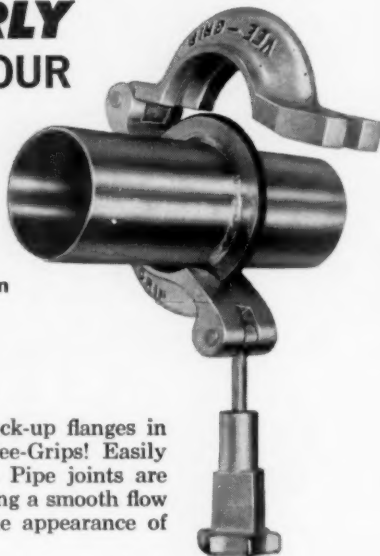
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CAMAS, WASHINGTON

DESIGNERS AND BUILDERS OF SPECIALIZED EQUIPMENT FOR PAPER MILLS AND CONVERTERS

INSTALL **OVERLY** VEE-GRIPS IN YOUR STOCK LINES

- A tight seal in seconds.
- Pipe is held in perfect alignment.
- Weigh less and cost no more than ordinary back-up flanges.
- Available for 3", 4", 6", 8" and 10" tube and pipe.

Save time! Replace ordinary back-up flanges in your stock lines with Overly Vee-Grips! Easily put on or taken off in seconds. Pipe joints are held in perfect alignment, assuring a smooth flow of stock. They also improve the appearance of your stock line installations.



Write for catalog and prices

Serving the paper industry in custom metal fabrication of engineered air systems — machine hoods — Gardner Dryers—Westinghouse Sturdevant fans and steam coils — stock pipe — distributor rolls — suction boxes — white-water pans — head boxes — tanks.



Box 468 Neenah Wisconsin

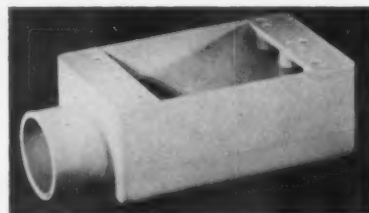
... NEW EQUIPMENT

by all surfaces. Adaptable for control studies from below zero to 400 F. Special range models available.

Supplier: Williamson Development Co., Inc., 317 Main St., W. Concord, Mass.

Electrical boxes

... are corrosion resistant



Applications: At wire junction and access fittings.

Advantages: Twelve new series of plastic electrical boxes have anti-corrosive properties. New items are junction, FS, FSC, FSS and FD boxes with types T, LB, C, LR, LL, E, and X access fittings. Boxes are supplied with covers, gaskets, and stainless steel screws. Supplier says all boxes are vapor and moisture proof.

Supplier: Kraloy-Chemical Co., 402 W. Central Ave., Santa Ana, Calif.

Meet Huyck's

MARSHALL McKEW



Marshall McKew is Huyck's Production Manager for Porosoft Needled Felts. A textile Engineer from Lowell Technological Institute, he has 15 years of manufacturing experience in both woven and needled textiles. Here at Huyck, his large production group employs the most modern equipment available built to our specifications.

Since purchasing the first wide needle loom used in the felt industry, Huyck has worked extensively on this new felt development. Marshall and his group draw heavily upon Huyck's background of needled felt experience and are constantly alert to improving all characteristics of Porosoft felts.

HUYCK FELTS

First in felts since 1870

PULP & PAPER — November 13, 1961



Fine paper starts in Puget's timber reserves.



PUGET PULP *
most important ingredient in fine paper

PUGET SOUND PULP & TIMBER CO.
BELLINGHAM • WASHINGTON

* A SOFTWOOD, CHLORINE DIOXIDE BLEACHED SULPHITE PULP

Engineers' obligations continued from p. 88

reasons of safety or maintenance of production.

2. Maintenance of quality of products.

3. Improvement of quality of products.

4. Expansion of capacity, or
5. Reduction of costs.

In planning and executing any project, engineering and technology are not, and cannot be, an end unto themselves. Their place in the picture is as one cog in the corporate scheme of things and their ultimate goal must be to enable the sales effort to successfully serve the market place against the inroads of competition. Engineering planning which ignores these ends can be serious or even disastrous to a company—as is evidenced by the bodies on the historical battlefield of American corporate life.

Some years ago, a series of cartoons entitled "The Little Scouts" appeared in the *Saturday Evening Post*. One such cartoon made a great impression on me and illustrates my point. It showed one little boy scout dangling over a high cliff reaching into an eagle's nest for the eagle's eggs. Another scout was holding his

feet. The angry mother eagle was swooping down with outstretched talons. The dangling scout was shouting pathetically to his friend, "Maybe we should have found out if there was a market for eagle's eggs before we started this."

Let us take a look at sales for a moment. The successful salesman in our industry has changed completely. The glad hand, the entertainer, and the golf course devotee no longer gets the order unless he has something else to offer. In our own sales departments we endeavor no longer to hire a young salesman unless he is prepared to spend many months as an in-plant trainee, learning at least the basic rudiments of manufacturing, technology and engineering so he can understand how all of these functions contribute to a successful sales effort.

Similarly, I hope our engineering people will gain a parallel understanding of the problems of sales and of their responsibility in helping the salesman meet the requirements of the market.

To see his job broadly
an engineer must move back far enough from it. He will see it take

on more significance and meaning. He will then see more clearly the challenge, the obligations and the opportunities which lie ahead.

He will then more clearly see the need for a closer working relationship between the engineer and people in the technical, manufacturing and sales field (even though their basic philosophies and functions may vary widely).

He will then see that social contact with these other groups is not enough and that a singleness of purpose and common goal within the corporation is worth striving for.

He will then see that the final success of a project rests in the degree of acceptance and use of the product or process in the market place.

And finally, that a closer and well-coordinated working relationship between people in the engineering, technical, manufacturing and sales departments is essential for corporate success, and perhaps survival in this modern era of rapidly changing technology, increasing costs, and aggressive competition.

These are things I mean by the term "Market-Oriented Engineer" and I hope to see a robust, market-oriented TAPPI help our industry meet the competitive problems that lie ahead. ■

WILLIAMS-GRAY

COMPANY

221 North LaSalle Street
Chicago 1, Illinois



**Serving
the
Paper
Industry**

1906

PAUL FOSTER
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Mount Vernon Dryer Felts

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Webbing, Apron Cloth, Wire Brushes

Chemical Pulping Processes

Chemipulp and Chemipulp-KC systems help achieve maximum production of uniform, high quality pulp at lower cost and provide means for efficient recovery of heat and chemicals.

- Hot Acid Systems
- Independent Recovery Systems
- Recovery Towers
- Digester Circulating Systems
- Chip Distributors

- Jet-Type Sulphur Burners
- Spray-Type SO₂ Gas Cooling Systems
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- Neutral Sulphite Semi-Chemical Liquor Plants
- Hydroheaters
- Black Liquor Oxidation Systems for Sulphate Pulp Mills

Chemipulp Process, Inc.

Watertown, N. Y.

Associated with

Chemipulp Process, Ltd., 253 Ontario St., Kingston, Ont.

•

Pacific Coast Representative

A. H. Lundberg Inc., P.O. Box 186, Mercer Island, Wash.

St. Regis Paper Co., Tacoma, Wash., installs rotary lime kiln...



new 275-ft "oven" bakes a batch of savings

This giant kiln is almost as long as a football field. It gulps in huge quantities of waste lime sludge and converts it into usable lime of uniform high quality. Because of a unique feeding system, it can process sludge and raw limestone (if needed) simultaneously.

Other Allis-Chalmers products at the mill include twelve ACAP pumps. These centrifugals adjust instantaneously to meet changing consistencies or pressure and volume requirements. Additional Allis-Chalmers contributions: several Super-Seal motors. They're open motors, but they shrug off floods, dust, contaminants —

and they have a 1.15 service factor.

An Allis-Chalmers subsidiary, Valley Iron Works Corporation, furnished a secondary headbox for the new paper machine at St. Regis. Valley headboxes offer "on-the-fly" adjustability, speed production, and eliminate costly machine shutdowns.

Allis-Chalmers equipment, processes and services are cutting costs and improving efficiency in every phase of the paper industry . . . from forest to finished product. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

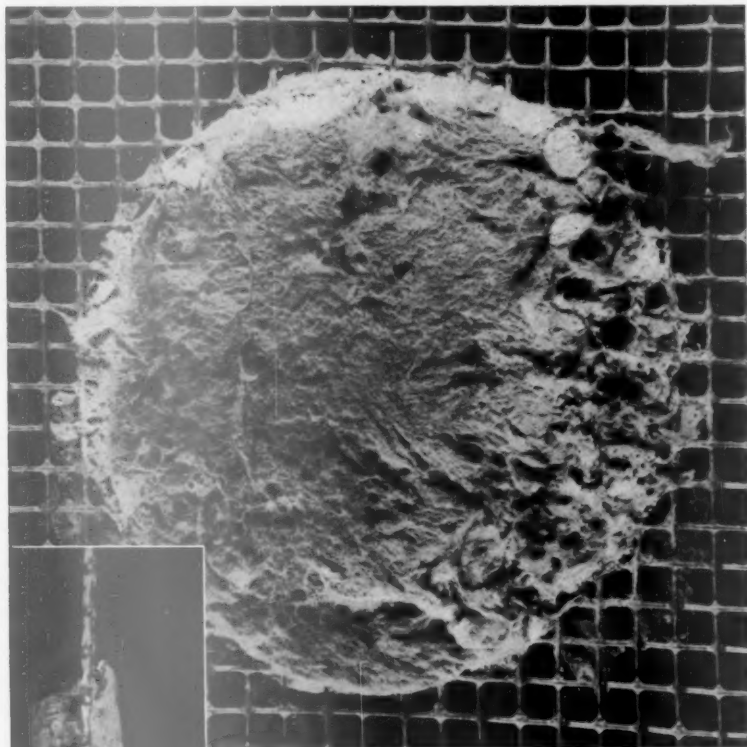
ACAP and Super-Seal are Allis-Chalmers trademarks.

ALLIS-CHALMERS



A-1538

We put a screen on the intake of a Nash Paper Mill Vacuum Pump for a few hours . . .



We were surprised, and so were the Mill Operators, at the fantastic amounts of foreign matter that will pass thru a Nash Vacuum Pump without injuring it, or in any way effecting the operation. Only a Nash Vacuum Pump can do this.

NASH
ENGINEERING COMPANY

South Norwalk, Connecticut, U. S. A.

SUPPLIERS . . .

Automatic control courses are being offered by Minneapolis-Honeywell's Philadelphia-based Instrumentation Education center. Two special courses, "Control Dynamics" and "Fundamentals of Instrumentation," are being offered in addition to regular instrument services and maintenance classes.

"Control Dynamics" is an intensive five day course for instrument and systems engineers covering non-mathematical techniques for evaluating process dynamics in solving automatic control problems.

"Fundamentals of Instrumentation" is primarily for engineers with little or no instrument experience and for those who want to review the principles of conventional instrumentation. This is a 10-day course.

Recent acquisition

of John W. Bolton & Sons, Inc. and The Emerson Mfg. Co. Division, Emerson, Mass. is Sheppard Plate and Machine Works, Atlanta, Ga. Purchase of the 41-year-old manufacturer of disc refiner plates has resulted in the formation of a new corporation affiliated with the parent company: Bolton-Emerson Southern, Inc. E. B. Sheppard, chief officer of the acquired firm, will continue in that capacity with the new corporation.

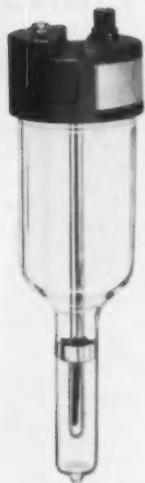


**CANADIAN FOREST
PRODUCTS LTD.
HOWE SOUND
PULP DIVISION**

999 West Pender Street
Vancouver, B. C.

are pleased to announce
the appointment of

Mr. David M. Amore
as Assistant Sales Manager
Pulp Sales



...with new rugged 7" reference
and 3 3/4" glass electrodes...



new industrial pH system stresses reliability, flexibility

Beckman, world leader in pH instrumentation, introduces the all-new Model J pH System: compact transistorized analyzer, short, rugged electrodes, and accessory mounting assemblies. Here's continuous analysis equipment which provides reliability, flexibility, and convenience never before possible in industrial applications.

Check these Model J features, then see your Beckman Sales Engineer or Recorder Company Salesman for complete details, or write for Data File 62-11-06.

READOUT FLEXIBILITY. Available with both ma and mv output for use with any potentiometric or current recorders and controllers—or, with mv output only—recorder scale may be expanded to any 2 pH span full-scale. High or low alarm feature may be added.

SOLID-STATE ELECTRONICS. Assures reliability and saves long-term maintenance costs.

QUICK-DISCONNECT ELECTRODES. Short, rugged glass and reference electrodes feature capscrew for quick connect-disconnect of spade lug connectors. Speeds installation and replacement of electrodes.

DRIFT-FREE OPERATION. AC chopper amplification provides stability of 0.01 pH/24 hrs. over a -20°F to $+122^{\circ}\text{F}$ ambient temperature range.

HIGH ACCURACY AND SENSITIVITY. Output accuracy and meter sensitivity is $\pm 0.02\text{pH}$ for full 0-14 pH or 0- ± 1400 mv range.

SIMPLIFIED MAINTENANCE. Plug-in components and circuits, rail-mounted analyzer chassis assure ease of maintenance, reduce downtime.

MINIMUM PANEL SPACE. Compact analyzer complements miniature current recorders, mounts in 6"x6" cutout.

ACCESSORIES FOR YOUR REQUIREMENTS. Variety of flow chambers and immersion and submersion units adapt Model J System to your present and future plant applications.

Beckman

INSTRUMENTS, INC.

SCIENTIFIC AND PROCESS
INSTRUMENTS DIVISION

Fullerton, Calif.

Visit our booth at the Chem Show



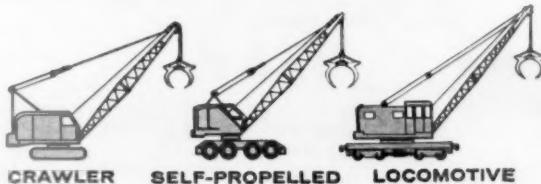
bought first AMERICAN in 1940 ...now own seven

Consolidated Water Power & Paper Co. (Wisconsin) has confirmed what they think of AMERICAN cranes in the most convincing way we know...with *repeat purchases* in 1947, 1952, 1955, 1957, and 1959. All seven of the AMERICAN cranes they have bought are in use today, including the first, which has been in steady operation for 21 years.

Shown above is one of their AMERICANS—a 40-ton locomotive crane working at their Appleton yard. Handling 8-ft. pulpwood, it is capable of unloading 15 cars (300 cords) in an 8-hour shift. The other 6 AMERICANS—four locomotive cranes and two crawler cranes—are at work in various other locations.

This record of dependable AMERICAN performance is being repeated in mill yards throughout the U. S. and Canada. AMERICAN stands ready to give you helpful and unbiased recommendations for lowering *your* pulpwood handling costs. Why do we say unbiased? Because we build *all* basic crane types—crawler, rubber-mounted, locomotive, and special-purpose—one suited exactly to your needs. Call in your AMERICAN representative today.

L-605



SUPPLIERS . . .

Nicholson Mfg. Co. now includes Hansel Mfg. Co., Lynnwood, Wash. and the Hansel Engineering Co., Ltd. as a division. Nicholson originated the mechanical ring barker and Hansel originated the horizontal feed chipper. T. W. Nicholson will continue as president. Sydney Hansel and Denis Riches will lead the Hansel division.

Chlorine-caustic soda expansion
has been announced by General Aniline & Film Corp. The company will spend between \$10 million and \$15 million to expand its facilities at its Linden, N. J. plant. Capacity of chlorine will be increased from 50 to 230 tpd.

Size press survey
has been made by the Patton Mfg. Co. The seven-page publication describes results of a research project on size press operations in mills throughout the country. More than 18,000 answers to 127 questions are tabulated. The report condenses operating characteristics, grades, speeds, nip pressures and other operating aspects of size presses as applied in the sample studied.

Supplier: The Patton Mfg. Co., 1803 W. Pleasant St., Springfield, Ohio.

LITERATURE . . .

Uses for glycolic acid
(hydroxyacetic), and its applications are listed for what is said to be the first time such technical information has been described. Applications: Adhesives for reaction with casein, dyeing, paper felt cleaning, and water system treatment.

Bulletin: Hydroxyacetic Acid
Supplier: E. I. Du Pont de Nemours & Co., Public Relations Dept., Room D-4147, Wilmington 98, Del.

Pneumatic transmitter
with a powerful servo system and plug-in components offers improved operation and added reliability. It is designed specifically for use with W&T metal-tube and glass-tube Varea-meters.

Bulletin: Catalog 530.100
Supplier: Wallace & Tiernan Inc., 25 Main St., Belleville 9, N. J.

Heavy-duty crane
in capacities from 5 to 30 tons for class D service is described in this colorful brochure. End trucks of structural steel are box-section type made from two wide flange beams. Bridge and trolley drive has double reduction enclosed splash lubricated gear reducers. Hoist motor has electric shoe brakes with torque ratings of 100% or more of the motor torque.

9 KEYS TO EFFICIENT PRESSURIZED REFINING



SPROUT-WALDRON PRESSURIZED REFINER

twice the normal capacity in a single unit

Those in the know were quick to choose THE NEW PRESSURIZED "SPROUTS"

Here is a different type stock preparation refiner designed for superior quality control, low operating costs and minimum maintenance. The parallel feed arrangement serves twin refining surfaces, giving twice the capacity of single disc units. Key to refining accuracy and dependability is the floating rotor shaft disc assembly which rotates between the fixed and hydraulically controlled movable heads. The flow of pulp is equally distributed between both sets of plates, assuring uniform refining and even plate wear. If you are looking for mechanical simplicity, high production and uniform quality, plus low operating and maintenance costs—get the facts on the Sprout-Waldron 20", 26", 34", and 42" pressurized refiners. Bulletins available on request.



Container Corporation of America
Consolidated Water Power &
Paper Co.

Oji Paper Company, Ltd.

Kimberly-Clark Corporation

Tammerfors Linne-Och Jern-
Manufaktur, A.-B.

Manchester Paper Board Co., div of
Federal Paper Board Co.

* over 13,000 connected horsepower



SPROUT, WALDRON & CO., INC.

M U N C Y , P E N N S Y L V A N I A , U . S . A .

E/209

SINCE 1866

REFINERS • CONVEYORS • FEEDERS • SCREENS • MIXERS • DRAINERS • STOCK PROPORTIONERS

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SILICONE
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to get best results on slipsheets or
containers for sticky products. Call
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for information and assistance in
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WAGDESIGN

**SUCTION
BOX
COVERS**



WAGSTOCK

Designed expressly for YOUR machine

<p>BETTER DRAINAGE SELF-CLEANING ELIMINATES STREAKS</p>	<p>LONGER LIFE INCREASES WIRE LIFE NON-CORROSIVE</p>
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One piece construction — up to 348"

WRITE or CALL for descriptive information, NEW catalogue . . .

A. P. WAGENKNECHT CO., INC., Thompsonville, Conn.

foremost developers of auxiliary paper machine equipment

LITERATURE . . .

Trolley frame is one-piece welded steel. The supplier says the crane can be engineered and assembled in fewer hours than can a custom built crane and that this results in cost savings.

Bulletin: Standard Tiger Crane, Whiting Corp., Harvey, Ill.

Condensed instrumentation guide has just been issued by Honeywell. Illustrated are the company's complete line of primary sensors, filled-system thermometers, pressure gauges, flow and liquid meters, etc.

Bulletin: G-1a, G. A. Reed, Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Pa.

CHEMICALS . . .

Colorimetric field test method has been developed for analyzing steam condensate or water samples for presence of filming amines. The test also can be used to determine concentrations of other long chain primary, secondary and tertiary aliphatic amines. Samples may be checked on a photometer, a specially calibrated viewer or by



Tile Linings Membrane Linings Tile Structures

Design,
Construction
and Maintenance

**STEBBINS
ENGINEERING AND
MANUFACTURING CO.**
WATERTOWN, N. Y.

Pensacola, Seattle,
Montreal, Vancouver



on more and more
paper machines —
it's
**SURFACE-WIND
REELS** by...

available with CENTER WIND ATTACHMENT

VALLEY IRON WORKS CORPORATION
APPLETON, WISCONSIN
a subsidiary of Allis-Chalmers Manufacturing Company

West Coast Representative: E. A. Berry, P.O. Box 958, Longview, Washington
Canadian Representative: Pulp and Paper Mill Accessories, Ltd., P.O. Box 850,
Saint Laurent, Montreal 9, Quebec



At Fibreboard Paper Products Corp. . . .



6

CAREFULLY SELECTED Warren Fan Pumps for quality improvement program

PLANNING is the key to efficiency in any fan pump installation.

Warren application engineers, with a world of experience in *all* phases of paper/pulp pumping, help plan the most efficient type of fan pumps for installations as shown above. At the San Joaquin (California) mill of Fibreboard Paper Products Corp., there are six Warren 20-DB-22 fan pumps. Each is rated for 13,000 GPM at 39 foot head, at 555 RPM.

In addition . . .

- Shafts and bearings are designed for 24 hours-per-day duty.
- Large liquid passages permit low velocities, high efficiencies and pulseless flow.
- Impeller eye area is properly sized for low entrance velocities.
- As with all Warren Fan Pumps of this size, dual volute construction is standard.
- Parts subject to inevitable wear can be replaced economically—impeller rings, case rings and shaft sleeves.
- Ring clearances are designed to maintain high initial efficiencies.
- Top quality materials of construction are used throughout.

Warren design and application engineers overlook nothing. Conservative specific speeds and accurate head and capacity requirements are also carefully planned. And from Warren's wide range of impeller styles they select the *one* that suits the application best.

Ask for the help of a Warren application engineer . . . *early* in your planning. That's when true pumping economy really begins.



P P 46

CENTRIFUGAL SCREW RECIPROCATING GEAR
WARREN PUMPS, INC.
WARREN, MASSACHUSETTS PEACE DALE, RHODE ISLAND

CHEMICALS . . .

eye. The supplier says the test can detect concentrations as low as 1/2 ppm, and is more accurate than the extraction procedure.

Supplier: Hagan Chemicals & Controls, Inc., Hagan Center, Pittsburgh 30, Pa.

Mineral filler

of extremely low density is claimed to have lowest apparent or bulk density of any known mineral filler. It is presently being used by some papermakers. "Dicalite Bulk-Aid" uses perlite, a siliceous mineral of volcanic origin. Grit-free particle size distribution for maximum bulking characteristics is achieved by the production process, the supplier says. Light weight, high bulking, high brightness and retention make the product suitable for use in paperboard. In dry powder formulations, the filler reduces bulk density and minimizes shipping and handling compaction.

Supplier: Great Lakes Carbon Corp., 18 E. 48th St., New York, N.Y.

Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, July 2, 1946 and June 11, 1960 (74 Stat. 208) showing the ownership, management, and circulation of PULP & PAPER, published bi-weekly at Bristol, Connecticut for October 1, 1961.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publishers: Wm. B. Freeman, Miller Freeman, Jr., 500 Howard Street, San Francisco 5, California; Editor: A. W. Wilson, 370 Lexington Avenue, New York 17, N. Y.; Managing Editor: Vincent W. De Salvo, 370 Lexington Avenue, New York 17, N. Y.; General Manager: Ralph R. David, 370 Lexington Avenue, New York 17, N. Y.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Miller Freeman Publications, Incorporated, 500 Howard Street, San Francisco 5, Calif.; Wm. B. Freeman, 500 Howard Street, San Francisco 5, Calif.; Miller Freeman, Jr., 500 Howard Street, San Francisco 5, Calif.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 8,153

Miller Freeman, Jr. (Signature of editor, publisher, business manager, or owner)

Miller Freeman, Jr., Publisher Sworn to and subscribed before me this 1st day of October, 1961.

[SEAL] Barbara M. Hampson, Notary of the Public San Francisco, California (My commission expires February 18, 1962.)

COMPLETED

Penn-Olin Plant



ON STREAM...over 25,000 tons of new sodium chlorate capacity

Customers are now receiving shipments of highest quality sodium chlorate from Calvert City, Kentucky, in new rail equipment specifically designed for this service. Place your order now with Olin Mathieson for shipment, immediately or according to your schedule.

As in the past, industry can count on Olin Mathieson's technical experience and service in handling sodium chlorate.

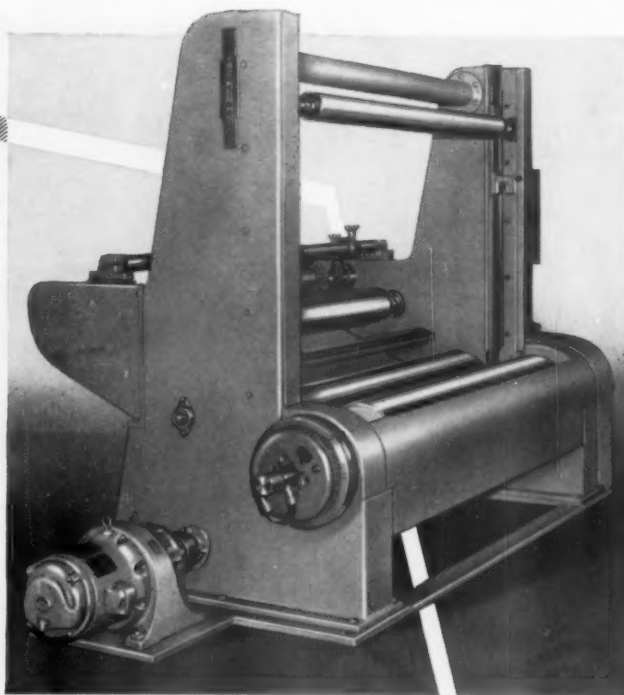
For your chlorate requirements, call one of our district offices or OLIN MATHIESON, Baltimore 3, Maryland.

1682

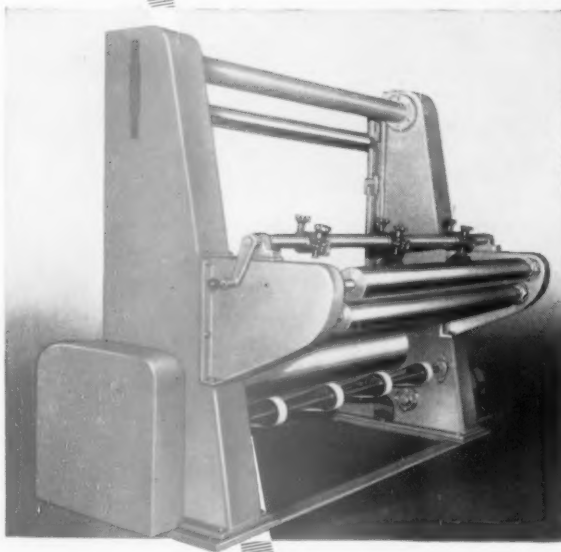
CHEMICALS DIVISION **Olin**

a new two-drum SLITTER REWINDER

for the
paper converting
industry



Designed for . . .



- ① High speed production.
- ② Winding and slitting of rolls up to 60" diameter and to 84" width.
- ③ Ease of operation:
 - a. Automatic threading.
 - b. Slitters and spreader readily adjustable.
 - c. Rider rolls raised and lowered electrically with easily adjustable pressure control.
- ④ Single or dual motor drive furnished for tension control.

Heavy box frame construction with large rolls for minimum deflection.


A TRULY DEPENDABLE WINDER WITH MINIMUM DOWNTIME AND MAINTENANCE

THE WORLD'S LARGEST
MANUFACTURER OF
CALENDER ROLLS



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KP-140

(TRI-BUTOXYETHYL PHOSPHATE)

low-cost defoamer stops pitting

Foam in the paper coating mixture causes pinholes in the coating and ruins surface smoothness so essential to good printing.

Foam can change the effective viscosity and specific gravity of the mixture, making it hard to handle.

KP-140 is a low-cost way to solve your foaming problems. Add it to pigment or adhesive during formulation

of the coating. It reduces surface tension, kills bubbles. Small quantities are sufficient to do the job.

KP-140 leaves no odor or harmful residue on paper surfaces.

For data sheet, price information and a list of representatives with warehouse stocks of KP-140, write to:



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Better look into Sinclair's new Dandy Roll Suction Box. It prevents picking and porosity in the making of thin and superfine papers. It makes good watermarks better.

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Write today and get convincing facts and special illustrated pulpwood bulletin . . . free upon request.



The OWEN BUCKET Co.

BREAKWATER AVENUE, CLEVELAND 2, OHIO

Southern Corporation, Charleston, S.C.

Replacement Screen Cylinders



to fit: SHARTLE - 24P Selectifier Screen

1. Completely interchangeable with your present screen plates.
2. Manufactured in all standard Shartle hole diameters and gauges of material.
3. Available in Type 316 Stainless Steel, Monel and Inconel.
4. Sold directly from the manufacturer through your Morey Paper Mill Supply sales representative.

Liberal discount by exchanging your old cylinders complete with rings.

Write for descriptive material. Dept. SP

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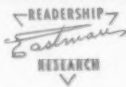
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The last word

Spruce and Poplar in Maine— Where Do They Stand Today for Pulp

Opening the mail is the first order of business in the editor's day. And among the news and story material, we are always glad to find a letter to the editor, be it pro or con. We welcome criticisms and corrections, and especially if they come from an "avid reader."

Such a reader is Karl A. Swenning, director of timberlands for Scott Paper Co., and an outstanding leader in the pulpwood field of this industry. He speaks with as much authority as anyone possibly could on pulpwood matters:

Mr. Albert W. Wilson, Editor
PULP & PAPER
New York 17, N.Y.
Dear Mr. Wilson:

It was rather surprising to find on page 41 of your October 2, 1961 issue that spruce is almost gone as a pulpwood in the State of Maine and further on page 42 where reference is made to poplar that "there's not much left anyway."

Having always been an avid reader of your magazine and having felt that its reporting was factual, these statements are rather shocking in the light of the figures given in the report of the Forest Service on "The Timber Resources of Maine," which was published in 1960. In that report we find that on table 7, page 49 under the heading of "Net Volume of Live Sawtimber and Growing Stock on Commercial Forest Land by Species" that the stand of spruce is 45.4 million cords, whereas balsam fir is about 40.6 million, white pine 18.4 million, hemlock 11.1 million.

In like manner it shows that there are 7.6 million cords of aspen (poplar) on these lands. Expressed in a different manner, spruce comprises approximately 35 per cent of the total softwood growing stock on commercial forest land in the State of Maine and aspen makes up approximately 10 per cent of the growing stock of hardwoods on these lands.

These figures hardly support the statement made in your article beginning on page 41 of the October 2 issue.

Eds. note—We were a little bit too general and too sweeping in our effort to tell our readers how softwoods were enjoying a real "shot-in-the-arm" as a pulp raw material at



MR. SWENNING . . . he knows his timber statistics.

Oxford Paper Co. in Maine, without much help of spruce. We also were talking about Oxford and not *all* of Maine.

We are sure Mr. Swenning will agree that spruce "ain't what it used to be." Our article stated that fir is now 65 per cent of Oxford's softwood supply. To be quite accurate, we should have said 65 per cent of the spruce and fir mixture at Oxford.

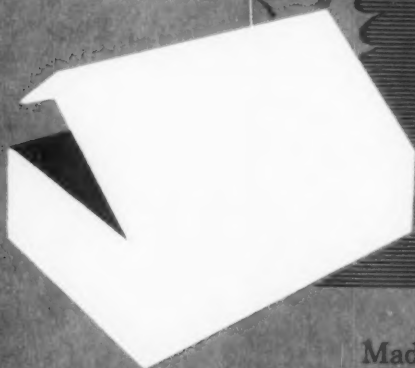
The story was basically about a new softwood kraft mill, which has followed logically, and in due course, the hardwood kraft mill at Oxford's Rumford operation. So now Oxford is entirely kraft—where it used to be a basically sulfite mill. There was lots of pine to be used and pine could not be "sulfited."

Now there are chips from sawmills and these are largely pine. And the hemlock is increasingly plentiful, according to Oxford operators. These are the "new" softwood resources.

Mr. Swenning, of course, is entirely right about poplar, also. But he does concede that poplar is only 10 per cent of the hardwoods. Birch, beech and maple were prolific as weeds when Oxford decided in 1951 to discontinue soda pulping of poplar and go to kraft pulping of these hardwoods. Oxford wanted to be in a position to use the abundant hardwood species other than poplar, and the poplar quantity did not compare with these other hardwoods.

We feel that "a Softwood Comeback"—to repeat our headline—truly captured the meaning of what Oxford is doing. Other softwoods—not spruce—are "carrying the ball," to use a popular autumnal term.

Spruce is being well used at Oxford but today it is only somewhere around 20 per cent, or maybe a bit higher, in Oxford's total paper furnish.



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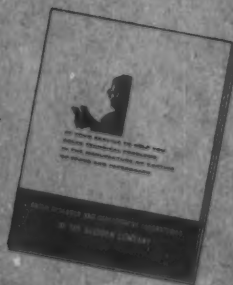
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